

UNIV. OF
TORONTO
LIBRARY

THE OPHTHALMIC RECORD

A Monthly Review of the Progress
of Ophthalmology.

EDITED BY

CASEY A. WOOD, M.D.,

Chicago

EDWARD JACKSON, M.D.,

Denver, Colo.

G. C. SAVAGE, M.D.,

Nashville

H. V. WÜRDEMAN, M.D.

Milwaukee

GEO. E. DE SCHWEINITZ, M.D.,

Philadelphia

W. E. HOPKINS, M.D.,

San Francisco

JOHN E. WEEKS, M.D.

New York

HAROLD GIFFORD, M.D.,

Omaha

FRANK ALLPORT, M.D., Chicago

T. A. WOODRUFF, M.D.

EDITORIAL SECRETARY

72 MADISON STREET, CHICAGO, ILL.

41,243
16.4.10

COLLABORATORS

FRANCIS VALK, M.D.,

New York

MELVILLE BLACK, M.D.,

Denver, Colo.

A. W. CALHOUN, M.D.,

Atlanta, Ga.

WM. DUDLEY HALL, M.D.,

Boston, Mass.

ALVIN A. HUBBELL, M.D.,

Buffalo, N. Y.

ROBERT L. RANDOLPH, M.D.,

Baltimore, Md.

F. B. EATON, M.D.,

San Francisco, Cal.

JOHN F. FULTON, M.D.,

St. Paul, Minn.

E. C. ELLETT, M.D.,

Memphis, Tenn.

CLARENCE A. VEASEY, M.D.,

Philadelphia, Pa.

DR. GEORGE J. BULL,

Paris, France

E. A. SHUMWAY, M.D.,

Philadelphia, Pa.

C. DEVEREUX MARSHALL, F.R.C.S. Eng., London, England

BROWN PUSEY, M.D.,

Chicago

DR. JAMES W. BARRETT,

Melbourne, Australia

W. GORDON M. BYERS, M.D.,

Montreal, Canada

ALBERT B. HALE, M.D.,

Chicago

B. E. FRYER, M.D.,

Kansas City, Mo.

FRANK C. TODD, M.D.,

Minneapolis, Minn.

CHARLES H. BEARD, M.D.,

Chicago

NELSON MILES BLACK, M.D.,

Milwaukee

INDEX TO VOLUME XIV, NEW SERIES
JANUARY TO DECEMBER, 1905

THE OPHTHALMIC RECORD.
CHICAGO.

CONTRIBUTORS TO VOLUME XIV.

Allport, Frank, Chicago, Ill.
 Axenfeld, Prof., Freiberg, Germany.
 Beard, Chas. H., Chicago, Ill.
 Black, Melville, Denver, Colo.
 Black, Nelson Miles, Milwaukee, Wis.
 Brady, George T., San Francisco, Cal.
 Brawley, Frank E., Chicago, Ill.
 Brose, L. D., Evanston, Ind.
 Bruns, Henry D., New Orleans, La.
 Byers, W. Gordon M., Montreal, Canada.
 Conkey, C. D., Superior, Wis.
 Donovan, John A., Butte, Mont.
 Eaton, F. B., San Francisco, Cal.
 Eberhardt, Dr., Michigan City, Ind.
 Ellett, E. C., Memphis, Tenn.
 Emerson, Linn, Orange, N. J.
 Francis, Lee Masten, Buffalo, N. Y.
 Fridenberg, Perey, New York.
 Gifford, Harold, Omaha, Neb.
 Gratiot, H. B., Dubuque, Iowa.
 Griffin, O. A., Ann Arbor, Mich.
 Hall, William D., Boston, Mass.
 Hansell, Howard F., Philadelphia, Pa.
 Hildrup, Josephine W., Philadelphia, Pa.
 Hotz, F. C., Chicago.
 Hubbell, Alvin A., Buffalo, N. Y.
 Jackson, Edward, Denver, Colo.
 Johnston, Richard H., Baltimore, Md.
 Keiper, George F., Lafayette, Ind.
 Kipp, Charles J., Newark, N. J.
 Koyle, Frank H., Hornellsville, N. Y.
 Kress, Palmer J.

Law, James.
 Ledbetter, S. L., Birmingham, Ala.
 Lewis, Frank N., New York, N. Y.
 Murray, Wm. R., Minneapolis, Minn.
 Oliver, Chas. A., Philadelphia, Pa.
 Oppenheimer, E. H., Berlin, Germany.
 Pancoast, J. Wm., Philadelphia, Pa.
 Patterson, James Allen, Colorado Springs, Colo.
 Pfingst, Adolph O., Louisville, Ky.
 Posey, Wm. Campbell, Philadelphia.
 Randolph, Robert L., Baltimore, Md.
 Ray, J. Morrison, Louisville, Ky.
 Rhoades, J. N., Philadelphia, Pa.
 Roy, Dunbar, Atlanta, Ga.
 Savage, G. C., Nashville, Tenn.
 Shastid, Thomas Hall, Harrisburg, Ill.
 Shumway, Edward A., Philadelphia, Pa.
 Stevens, E. W., Denver, Colo.
 Stevenson, Mark D., Akron, Ohio.
 Sweet, William M., Philadelphia, Pa.
 Thomson, Edgar S., New York, N. Y.
 Thomson, J. J., New York, N. Y.
 Todd, Frank C., Minneapolis, Minn.
 Valk, Francis, New York, N. Y.
 Veasey, C. A., Philadelphia.
 Wadsworth, O. F., Baltimore, Md.
 Wamsley, J. Winter, Philadelphia, Pa.
 Weeks, John E., New York, N. Y.
 Wells, David W., Boston, Mass.
 Wilder, Burt G.
 Wood, Casey A., Chicago, Ill.
 Woods, Hiram, Baltimore, Md.
 Würdemann, H. V., Milwaukee, Wis.
 Young, H. B., Burlington, Iowa.

INDEX.

A	
Abscess, Exophthalmus and Sphenoidal	18
Acuty of Central Vision, The Fovea Centralis and	335
Adrenalin in Glaucoma, A Warning Against the Unrestricted Use of.	181
Advancement Forceps, A New.....	574
Allport, Frank	74
Amaurosis, Case of Bilateral Hysterical	53
Amaurosis from Paraffin Injected Into the Nose. Another Case of.	182
Amaurosis from Nose Blowing, Transitory	231
America, My Third Trip to.....	576
Amblyopia, A Case Simulating Toxic	218
Amblyopic Eye Following Injury to Its Fellow. Recovery of Vision in a Non-Squinting.....	515
Anatomy of the Eye, Comparative.	431
Anesthesia, Massage as an Aid to Local	78
Antisepsis After Cataract Extraction, Persistent	77
Artificial Eye, The Suleus Question for	520
Astigmatism Produced by Chalazion, Changes in	420
Axenfeld, Prof.....	222

B	
Bacteria, A Brief Note on the Relative Virulencies of Differently-Tinted Colonies of Chromogenic..	4
Bacteriology, On the Limitation of Ultra-Microscopy in.....	168
Bacteriology, Some Practical Aspects of Conjunctival.....	228
Beard, Chas. H.....6, 175, 333, 335, 348	
Bibliography, A Study in.....	220
Black, Melville.....71, 75, 167, 541	
Black, Nelson Miles.....	160
Blenorrhœa Neonatorum, Treatment of	285
Blepharoplasty Syndrome, On the Origin of the Pain in Photophobia and the	357
Blessing in Disguise, A.....	540
Blindness from the Use of Chewing Tobacco	485
Blood Pigment, and One of Hemorrhage in the Cornea, A Case of Discoloration of the Cornea by..	368

Bonn, The Eye Klinik at.....	531
Brady, George T.....	429
Brain, Why a Dominant Side of the	381
Brawley, Frank E.....	480
Breech-pin in Ophthalmology and Surgery	124
Breech-pin in Orbit Three Years...	117
Brose, L. D.....	59
Bruns, H. D.....	420
Byers, W. G. M.....	228

C	
Caruncle, Report of a Case of Papilloma of the Lacrymal.....	58
Cataract, The Use of Heat and Cold After Discussion for Congenital..	76
Cataract, with Iridemia Zonular. Extraction of the Lens, which Had Become Opaque, in the Capsule, with Microscopic Examination. Zonular	364
Cataract Extraction, Contact Keratitis After	421
Cataract Extraction, A Few Expedients in	75
Cataract Extraction, Persistent Antisepsis After	76
Cataract Extraction, On Irrigation of the Anterior Chamber in the Operation of	175
Catarrh, What Are the Essential Characters of Spring.....	25
Chalazeon Forceps. A New Model..	568
Choroid, Diffuse Leucosarcoma of the	157
Choroid, Ophthalmoscopic Appearances of Perivaseulitis of the Retina and	577
Choroid, Two Cases of Melanosarcoma of the.....	271
Choroid, with the Report of a Case of this Character and of Another exhibiting a Pigmented Sarcoma of the Choroid Early in Its Development, Melanoma of the.....	305
Choroid, with Secondary Involvement of the Ciliary Body, Report of a Case of Leucosarcoma of the.	62
Conjunctiva, Another Case of Papilloma of the.....	217
Conjunctivitis, The Treatment of Purulent	79
Conjunctivitis, An Instance of Parinaud's	215
Conjunctivitis in the Negro, Vernal.	473

INDEX.

Conjunctivitis, Parinaud's, Report of Three Cases	11
Conkey, C. D.	209
Corectopia, with Aphakia, Report of a Case of Congenital.....	526
Cornea, Primary Epithelioma of the	429
Cornea, Streptothrix Ulcer of the...	172
Cornea by Blood Pigment, and One of Hemorrhage in the Cornea, A Case of Discoloration of the....	368
Cornea, A Case of Congenital Leu- coma of the.....	527
Cyclodialysis, A New Glaucoma Op- eration	384
Cysts on the Anterior Surface of the Iris, The Formation of Serous.	35
D	
Dionin	37
Diplobacillus of Morax and Axen- feld, On Clinical Importance of the	511
Disinfection, with Especial Consid- eration of Iodoform, Intra-Ocular.	37
Douvan, John A.	10
E	
Earning Ability, The Medico-Legal Relations of Ocular Injuries, Pen- sion and Insurance Rates, and a Scientific Plan for Examination of the	221
Eaton, F. B.	73, 168
Eberhardt	441
Echinococcus Cyst of the Orbit....	546
Ellett, E. C.	11, 83, 134, 226
Emerson, Linn	515
Empiricism	69
Epithelioma of the Cornea, Primary	429
Ethmoidal Cells and Frontal Sinus, Exophthalmus Caused by Disease of the—Drainage; Recovery.....	270
Exenteration, Knife-Spatula.....	333
Eye, Comparative Anatomy of the.	431
Exophthalmus and Sphenoidal Ab- scess	18
Exophthalmus Caused by Disease of the Ethmoidal Cells and Frontal Sinus—Drainage; Recovery	270
Eye Diseases, Tropical.....	341
Eye from Particles of a Copying Pencil Getting Into the Conjunc- tival Sac, Injuries to the.....	1
Eye Strain and Nervous Disorders.	382
Eye Klinik at Bonn.....	531
Eyeball, Indirect Injury to the....	441
Eyeball, Purulent Meningitis Fol- lowing Enucleation of.....	36
Eyeball, Penetrating Shot Injuries of the	59
Eyelid, Eyeball and Through the An- trum of Highmore, Tine of Steel Fork Thrust Through the Left;	

Therein for Fourteen Years. Re- moval; No Reaction.....	426
F	
Foreign Bodies in the Eye by Means of the Roentgen Rays, On the Various Methods Employed in Localizing	253
Foreign Bodies in the Orbit, The Difficulties Attending Diagnosis of Aseptic	160
Foreign Bodies in the Eye. Localiza- tion of	282
Fovea Centralis and the Acuity of Central Vision, The.....	335
Fracture of the Floor of the Orbit.	122
Fridenberg, Percy	357
Frontal Sinus, Exophthalmus Caused by Disease of the Ethmoidal Cells and—Drainage; Recovery.....	270
G	
Gifford, H. 124, 169, 182, 232, 384,	485, 486, 511
Glaucoma, A Warning Against the Unrestricted Use of Adrenalin in.	181
Glaucoma Operation—Cyclodialysis, A New	384
Gratiot, H. B.	526
Griffin, O. A.	215
H	
Hall, Wm. D.	29, 172, 341, 543, 546
Hansell, Howard F.	315
Hemorrhage in the Cornea, A Case of Discoloration of the Cornea by Blood Pigment and One of.....	368
Homatropin Instilled into the Eyes. A Case of Almost Fatal Poisoning by	569
Hildrup, Josephine W.	211
Hotz, F. C.	569
Hubbell, Alvin A.	135
Hypermetropia, the Cause of the Difficulties Attending Refraction Work—Latent	337
Hysterical Amaurosis, Case of Bi- lateral	53
I	
Injury to the Eyeball, Indirect....	441
Injuries to the Eye from Particles of a Copying Pencil Getting Into the Conjunctival Sac.....	1
Injuries of the Eyeball, Penetrating Shot	59
Injuries from Bursting of Locomo- tive Water and Oil Gauges.....	209
Injuries, Ocular	565
Injuries, Pensions and Insurance Rates, and a Scientific Plan for Estimation of the Earning Abili- ty, The Medico-Legal Relations of Ocular	221

INDEX.

Instruments, Eye, Three New Models	6
Iodoform, The Failures of Intra-ocular Disinfection with.....	180
Iodoform, Intraocular Disinfection, with Especial Consideration of.....	37
Iridemia, Extraction of the Lens, Which Had Become Opaque, in the Capsule, with Microscopic Examination, Zonular Cataract, with.....	364
Iris, The Formation of Serous Cysts on the Anterior Surface of the	35
Iritis, Recurrent, A Study of Nine Cases	320
Irrigator and Lachrymal Syringe, A Combined Anterior Chamber.....	134
Irrigation of the Anterior Chamber in the Operation of Cataract Extraction, On	175

J

Jackson, Edward	221
Johnston, Richard H. 157, 163, 217, 270	

K

Keiper, George F.	122, 426
Keratitis After Cataract Extraction, Contact	421
Keratitis, Report of Ten Cases of Interstitial	211
Keratitis, Tuberculin T in the Diagnosis and Treatment of Interstitial	135
Kipp, Charles J.	271
Koyle, Frank H.	411
Knife-Spatula, Exenteration.....	333
Kross, Palmer J.	171

L

Lachrymal Gland, Tuberculosis of the	29
Lachrymal Obstruction, The Conservative Management of.....	226
Law, James	431
Ledbetter, S. L.	117
Leprosy of the Eye, A Further Contribution to our Knowledge of... 178	
Lewis, Frank N.	364
Leusarcoma of the Choroid, with Secondary Involvement of the Ciliary Body, Report of a Case of... 62	
Leucoma of the Cornea, A Case of Congenital	527
Leucosarcoma of the Choroid Diffuse	157
Localization of Foreign Bodies in the Eye	282

M

Magnetic Properties of Steel Alloyed with Other Metals.....	264
Malingering, A New Apparatus for Detecting	348
Massage as an Aid to Local Anesthesia	78

Melanoma of the Choroid, with Report of One Case of This Character and of Another Exhibiting a Pigmented Sarcoma of the Choroid in Its Development.....	305
Melanosarcoma of the Choroid, Two Cases of	271
Meningitis Following Enucleation of the Eyeball, Purulent.....	36
Mesencephalic Paradoxes	442
Mueller's Provisional Prothesis, Death Following the Use of.....	486
Murray, William R.	428
Muscle Testing in Refraction.....	411
Muscles and Refraction, The Relation Between Ocular	83
Myopia, Lange's Theory as to the Cause of Progressive.....	542
Myopia, Operative Treatment of... 10	

N

Nasal Disorders to Vitreous Opacities, Concerning the Relationship of	105
Needle-holder for the Ophthalmic Surgeon, A New.....	525
Nematodes Parasitic in the Eyes of Birds, Manson's Eye Worm of Chickens, with a General Review of	138
Nervous Disorders, Eye Strain and.....	382
Neurons, The Visual and Oculomotor	15
News Items, 48, 104, 155, 204, 252, 303, 356, 409, 463, 506, 561	
Nodosa, Ophthalmia	65
Novocain, a New Anesthetic.....	578

O

Ocular Injuries.....	565
Oculist and the Optician, The.....	170
Oliver, Charles A.	4
Operations on the Eye and Adnexa, Recent Changes in the Technic of Some	118
Oppenheimer, E. H.	24
Ophthalmia After Panophthalmitis, A Case of Sympathetic.....	528
Ophthalmia Neonatorum, Fatal Septicemia Due to.....	519
Ophthalmia Nodosa	65
Ophthalmic Training in the Medical School	166
Ophthalmology, Recent Books on.....	153
Opponent, A Treacherous.....	283
Optician and the Medical Profession	68
Optician and the Oculist, The.....	170
Orbit, A Case of Cystic Sarcoma of the; Extirpation; Death.....	315
Orbit, Gunshot Wound of; Post-Traumatic Delirium; Removal of Bullet with Conservation of Globe	112
Orbit Three Years, Breech-Pin in... 117	
Orbit, Echinococcus Cyst of the.... 546	

INDEX.

Orbit, The Difficulties Attending Diagnosis of Aseptic Foreign Bodies in the.....	160
Orbit, Fracture of the Floor of the.....	122

P

Pain in Photophobia and the Blepharoplastic Syndrome, On the Origin of	357
Pancoast, J. William.....	218
Panophthalmitis, Sympathetic Ophthal- mia After	528
Patterson, James Allen.....	105
Papilloma of the Conjunctiva, An- other Case of.....	217
Papilloma of the Lachrymal Carun- cle, Report of a Case of.....	58
Parinaud's Conjunctivitis, Report of Three Cases	11
Parinaud's Conjunctivitis, An In- stance of	215
Paradoxes, Mesencephalic	442
Perivasculitis of the Retina and Choroid, Ophthalmoscopic Appear- ances of	577
Pfingst, Adolph D.....	53
Photophobia and the Blepharoplastic Syndrome, On the Origin of Pain in	357
Posey, William Campbell.....	112
Progress in the Light of Knowledge, Work and Character.....	71
Prothesis, Death Following Use of Mueller's Provisional	486
Pseudo-Pterygium and Symblepha- ron Relieved by the Use of Thiersch Grafts, A Case of.....	428
Pterygium	465
Pterygium, The Pathology of.....	163
Pupil, Remarks on Irregularities in the Form of the.....	21
Pupils in Public Schools, Health of.....	74

R

Randolph, Robert L.....	178, 285, 542
Ray, J. Morrison.....	1
Recovery of Vision in a Non- Squinting Amblyopic Eye Follow- ing Injury to Its Fellow.....	515
Refraction and to Make It More Ac- curate, A New Experiment: To Shorten the Subjective Branch of.....	376
Refraction, Muscle Testing in.....	411
Refraction, The Relation Between the Ocular Muscles and.....	83
Refraction Work, Latent Hyperme- tropia, the Cause of the Difficul- ties Attending	337
Rhoads, J. N.....	269, 376
Roy, Dunbar	473
Retina and Choroid, Ophthalmo- scopic Appearances of Perivascu- litis of the.....	577

Roentgen Rays, On the Various Methods Employed for Localizing Foreign Bodies in the Eye by Means of the.....	253
---	-----

S

Society Reports:

American Academy of Ophthal- mology	487
American Medical Association....	386
American Ophthalmological So- ciety	288
Berlin Ophthalmological Society,	46, 147, 351, 558
British Medical Association.....	449
Chicago Ophthalmological Society,	86, 198, 445
Colorado Ophthalmological Socie- ty.....	39, 100, 185, 246, 352, 555
Mexican Ophthalmological Socie- ty	43
Philadelphia Section Ophthalmol- ogy, College of Physicians.....	91, 192, 233, 550
San Francisco Society of Eye, Ear and Throat Surgeons.....	406
United Kingdom, Ophthalmological Society of.....	44, 149, 188, 403, 503, 559
Wills' Hospital, Association of Clinical Assistants	146, 202
Sach's Lamp for Transillumination of the Eye.....	279
Sarcoma of the Choroid Early in Its Development, Concerning Melano- ma of the Choroid, with Report of One Case of This Character and of Another Exhibiting a Pigmented... ..	305
Sarcoma of the Orbit, Case of Cystic —Extirpation; Death	315
Savage, G. C.....	15, 382
Sclera, Gummatous Tumors of the.....	35
Septicemia Due to Ophthalmia Neo- natorum, Fatal	519
Shastid, Thomas Hall.....	466
Shumway, Edward A.....	35, 305
Skiascopy and a Pupil Stop, Influe- ence of the Size of the Pupil in... ..	570
Stevens, E. W.....	519
Stevenson, Mark D.....	525, 574
Shield for the Eye in Skiascopy, A.....	269
Sweet, William M.....	264
Skiascopy, A Shield for the Eye in.....	269
Sphenoidal Abscess, Exophthalmus and	18
Spring Catarrh, What Are the Essen- tial Characters of.....	25
Steel Alloyed with Other Metals, Magnetic Properties of.....	253
Straddle the Fence, Why.....	167, 225
Streptothrix Ulcer of the Cornea....	172
Sulcus Question for Artificial Eye, The	520

INDEX.

Symblepharon, Relieved by the Use of Thiersch Grafts, A Case of Pseudo-Pterygium and	428
Syphilis in the Same Subject, Inherited and Acquired.....	424
Syringe, Combined Anterior Chamber Irrigator and Lachrymal....	134

T

Test Types, A Practical System of Near	158
Thomson, Edgar S.....	379, 364
Thiersch Grafts, A Case of Pseudo-Pterygium and Symblepharon Relieved by the Use of.....	428
Thomson, J. J.....	118
Thigenol in Ocular Therapeutics....	543
Todd, Frank C.....	79, 337
Toxic Amblyopia, A Case Simulating	218
Trachoma, A Simple Instrument for Removing Granulations in.....	24
Trachoma as Treated by Dr. Kuhnt of Konigsberg	480
Transillumination of the Eye, The Sach's Lamp for.....	279
Tropical Eye Diseases.....	341
Tuberculin T in the Diagnosis and Treatment of Interstitial Keratitis	135
Tuberculosis of the Lachrymal Gland	29
Tumors of the Sclera, Gummatous..	35

U

Ulcer of the Cornea, Streptothrix...	172
Ultramicroscopy in Bacteriology, On the Limitation of	168
Uveitis, Acute Non-Traumatic, Re- marks on a Series of Six Cases...	516

V

Valk, Francis	69, 383
Vernal Conjunctivitis in the Negro..	473
Veasey, C. A.....	58, 62
Vision, The Fovæ Centralis and the Acuity of Central.....	335
Vision in a Non-Squinting Amblyopic Eye Following Injury to Its Fellow, Recovery of.....	515
Vitreous Opacities, Concerning the Relationship of Nasal Disorders to ..	105

W

Worm of Chickens, with General Review of Nematodes Parasitic in the Eyes of Birds, Manson's Eye..	138
Wadsworth, O. F.....	368
Wamsley, J. Winter.....	520
Weeks, John E.....	23, 25, 283
Wells, David W.....	158
Wilder, Burt G.....	442
Wood, Casey A.....	25, 531
Woods, Hiram	320
Würdemann, H. V...18, 138, 223, 225,	528

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JANUARY, 1905 VOL. XIV. No. 1. NEW SERIES

Original Articles.

INJURIES TO THE EYE FROM PARTICLES OF A COPYING PENCIL GETTING INTO THE CONJUNCTIVAL SAC. REPORT OF TWO CASES.

J. MORRISON RAY, M.D.

LOUISVILLE.

The recent study of the injurious influence of certain aniline dyes when accidentally gotten into the eye makes a detailed report of the following cases of some interest:

CASE 1.—Lula J., aged 15, female, student of a business college, consulted me Nov. 20, 1901.

History.—Three days before coming, while sharpening an indelible pencil, a particle of the point got into the right eye. Considerable smarting and lachrymation followed, but in a short while the pain subsided and the only discomfort left was the excessive lachrymation, which was stained a deep blue. The following morning the eyelids were swollen and the discoloration of the secretion greater and the sight blurred.

When I saw her the skin of the eyelid and down on the cheek was stained a bluish color. The lids were much swollen, the lachrymation profuse and the eye very sensitive to light.

When the conjunctiva was inspected it was found swollen and deeply infiltrated with a bluish stain. The cul-de-sac of the lower lid contained a small particle of the coloring matter from the pencil. The upper lid was so thickened and painful on manipulation that inspection of the upper cul-de-sac was impracticable. The corneal epithelium was deeply colored blue and so steamy that only a blurred iris could be seen. V=counting fingers.

The particle present in the lower fold was removed, the eye freely irrigated, atropia drops instilled and a boric-acid ointment ordered, with the belief that the particle removed was the only piece in the eye.

Nov. 27, 1901, she came again, with the condition very much exaggerated. The upper lid was swollen, stiffened and overlapped the lower lid. General edema of the conjunctiva with infiltration and thickening of both lids; on the conjunctiva of the lower cul-de-sac an erosion marked the point where the particle of lead had been removed, likewise there was present an area of eroded scleral conjunctiva corresponding with the inner third of the upper lid and extending well into the upper cul-de-sac. The entire surface still stained a deep blue. On the upper inner corneal segment is an area of destruction of the epithelium $2\frac{1}{2}$ c.c. in width. The cornea is still stained, the anterior chamber deep. V.=20/100. The upper lid was so thick and painful on manipulation that the upper cul-de-sac could not be inspected. The tears still of a bluish tinge.

December 6.—The swelling has lessened, but the parts are still stained. With some effort the upper lid is everted and a mass of slough cleaned out of the cul-de-sac, which was found to contain a gritty particle which proved to be a piece of the pencil point. This was all carefully removed with curette and forceps. A large ulcer involves the cornea and conjunctiva, extending into the upper cul-de-sac.

December 11.—This ulcerated surface has begun to cicatrize and a symblepharon is developing. V.=20/10+.

December 20.—Improvement is rapid, but the cornea is still ulcerated. Stain slowly fading. V.=20/50+.

Jan. 10, 1902.—Only slight corneal haze present, but the contraction in the cul-de-sac has produced a band of tissue which has drawn the conjunctiva over on the cornea similar to a pterygium. V.=20/30—. The irritation gradually disappearing.

June, 1902.—A broad flat pterygium marks the site of the corneal erosion. V.=20/20—.

October, 1902.—I operated by transplanting the mass of cicatrized, conjunctival tissue into the upper cul-de-sac, in a manner very similar to the McReynold operation for pterygium. The operation was a complete success, and in April, 1903, the only evidences left were an area of corneal haze at site of the pterygium and a slight ptosis from the cicatrization in the cul-de-sac. V.=20/15 w. +1.25 Ds. The surface of the cornea is irregular over the area from which the growth had been removed.

CASE 2.—A. F. D., aged 29, foreman in a manufacturing establishment, came to me Nov. 14, 1904.

History.—The day before, while sharpening an indelible pencil, a particle of the point struck him in the left eye. There was no great pain, but he noticed when he rubbed the eye that the tears

were stained and that all objects he looked at were colored and hazy. Four hours later the eye became painful, the watery secretion from it ran down on his face and stained the cheek. When I saw him the skin of the lid and cheek for some distance around was blue-stained. The conjunctiva and conjunctival secretion were stained. The cornea presented near its center a small foreign body, and radiating from this as a center the corneal epithelium was deeply stained. Immediately surrounding the particle the epithelium was swollen and eroded. The conjunctiva and lids were edematous, and he complained of some pain and photophobia. V.=6/200.

Under holocain anesthesia I removed the foreign body, which proved to be a small particle of the coloring matter from the indelible pencil. The iris was clouded by the stained cornea, but the pupil dilated on an instillation of atropia solution. He was ordered boric-acid irrigation and peroxid of hydrogen instillation, with the hope that the latter would act as a decolorizer. The following day the discoloration had largely disappeared, the only remaining stain being a small area immediately surrounding the location of the particle on the cornea. The eye was still painful and the lid edematous.

November 16.—V.=6/200. Still pain and the corneal excoriation stained blue. November 20, abrasion less and stain fading; pain gone. Dec. 13, 1904, still slight stain. V.=20/30. No pain and man considers himself over his trouble.

The ordinary copying or indelible pencil is said to contain, besides graphite, a small quantity of tallow and an aniline coloring matter, usually methyl blue, gentian blue or methyl violet. Recently Grafin has shown that some of the aniline coloring matters produced a violent reaction when placed in the conjunctival sac, and in rabbits destruction of the eye followed their use. The severity of the reaction following an apparently simple accident, as in Case 1, was a surprise and was probably exaggerated by the quantity of material gotten in the eye and the length of time it was allowed to remain. When the mass was finally removed from the superior cul-de-sac it was firmly imbedded in the conjunctiva and had become disintegrated by the action of the conjunctival secretions. Probably certain chemical changes had taken place that added to the caustic action of the aniline mass. The conjunctiva, in addition to being much stained and thickened, presented a peculiar dry appearance and was partly anesthetized, the slough that came away being removed by a sharp curette and forceps without pain.

While this case was under my observation I noticed that Dr. H. H. Tyson had reported a case to the section on ophthalmology of the

New York Academy of Medicine (*Knapp's Archives*, vol. xxx, No. 1, p. 77), in which a similar injury was followed by as much or more reaction as was present in the case here reported.

In the November *Ophthalmoscope* are found abstracts of cases reported by Praun, Bock, Natanson and Kauffman. In all of these much reaction followed the accident. Praun suggests that the use of peroxid of hydrogen as a decolorizing agent will assist in a rapid removal of the stain. In Case 2 I tried this suggestion and it possibly had some effect, yet one month after the injury there were still evidences of a stain at the point where the material had been imbedded in the corneal epithelium, and the vision was still below the normal in acuteness. The peroxid was used diluted, one part to three.

The prevalent use in recent years of the commercial copying pencil makes a knowledge of its possible damage, when accidentally gotten into the eye, of practical importance. Thus the report of these two cases, which are the only ones of which I have personal knowledge.

423 W. Chestnut Street.

A BRIEF NOTE ON THE RELATIVE VIRULENCIES OF DIFFERENTLY TINTED COLONIES OF CHROMOGENIC BACTERIA.

CHARLES A. OLIVER, A.M., M.D.

PHILADELPHIA.

In December, 1901, the writer, after some two years of experimental work on the effects of change of color on pigment bacteria, read a paper before the Section on Ophthalmology of the College of Physicians of Philadelphia. In this communication¹ the following conclusions were formulated:

1. Color-changes, both of kind and intensity, take place in and around many chromogenic bacteria when such micro-organisms are placed under different color-conditions.

2. The replacing of chromogenic bacteria into their normal environments, after having obtained a new color-value under a particular color-condition, is frequently accompanied, sooner or later, with a return of the germ's color-equivalent to that which it primarily held while in its original situation.

3. Differences of color-conditions in pigment-bacteria most prob-

1. An Experimental Study of the Effects of Change of Color on Pigment Bacteria, by Charles A. Oliver, A.M., M.D., of Philadelphia. The American Journal of the Medical Sciences, April, 1902.

ably signify, in part, relative differences in the various methods of obtaining sustenance, peculiarities in the kinds and the ratios of foodstuffs, and irregularities in the character of resulting excreta; each species of color-bacterium exhibiting its chromogenic change in a typical and relevant manner.

4. The naming of bacteria by specific coloration is of value only when the actual habitat of the micro-organism is understood.

5. As a conclusion based on these facts, it is most certain that all living faunal and floral color-changes of true objective type are expressions of biochemical peculiarities existing in such organisms—a mere difference of molecular motion—dependent on the relationship existing between active life force and coexisting conditions.

A series of observations on the relative virulencies of the differently tinted colonies of the same bacterium: the seasonal, the altitudinal, and the climatic differences of coloration in the chromogenic forms of bacteria; and the selective color-points of greatest and least development, growth, and sporulation of paratrophic and metatrophic bacteria, etc., have since been conducted and a portion of this work has been completed.

The same care has been taken in the selection and preparation of the material to be experimented on as during the first series of studies; proved bacterial matter kept strictly in its own peculiar environment and individual condition has been employed; and every necessary detail consistent with certainty and surety has been attended to throughout the entire work.

As a result it has been found:

1. That the physical condition of the germ itself is in strict relationship to the color-condition under which the germ is grown and developed.

2. That the same bacterium grown under various color environments possesses different, yet directly related, degrees of virulence when placed on similar culture grounds.

3. That, as a rule, the germ colonization mass, when it is developed and grown beneath color media which permits the passage of the so-called actinic rays, becomes less optimal and, apparently as a result, less virulent.^{2 3}

2. The more bleached the bacterial masses the less irritating they appeared to be when introduced into the tissues of animals confined to the same color environments. That is, the germ did not regain its virulence by being placed in animal tissue of the color environment which had deprived it of that virulence were continued.

3. The author desires to express his thanks to Drs. Napoleon B. Boston, Clarence Van Epps and others for their kind association and assistance in this work.

EYE INSTRUMENTS—THREE NEW MODELS.

CHARLES H. BEARD, M.D.

CHICAGO.

(Illustrated.)

The instruments in question the writer has devised within the past eighteen months. Although they have never before been described in print, they have already met with considerable favor. They are:

1. A scalpel.
2. A blepharostat for flap extraction.
3. A lid-forceps.

The knife (Fig. 1) is a slight modification of one introduced by me some ten or twelve years ago. It was originally intended mainly for use in blepharoplasty, but, because of the convenient form of the blade, it has become my chosen knife in all instances where a scalpel is needed, entirely superseding other models. It owes its individuality to the great convexity of that part of the edge which is situated near the extremity of the blade; and that which distin-



Figure 1.

guishes the present model from its predecessor is the addition of an extra crescent, as it were, to the already marked prominence of outline that characterized the blade of the older instrument at this place.

A brief study as to the manner of cutting of the ordinary von Arlt scalpel, which is the kind commonly in use, will suffice to make at once apparent the advantages of the one here given. The actual working portion of a scalpel is confined to the point and approximately, so much of the adjacent edge as corresponds to the hypotenuse of that angle whose shortest side is represented by the depth of the incision at the tip of the blade. The length of the hypotenuse will vary with the inclination of the handle and the depth of the cut. Now, with the knife held penholder fashion, as usually taught, and with incisions of average penetration, it follows that the extent to which the edge engages the tissues is, for the most part, very slight, being limited to the point and the several contiguous millimeters. Even with the handle brought the nearest possible to the horizontal that is consistent with this manner of holding, the amount of available edge is, as a rule, less than one-fourth of the whole. Therefore, as regards the cutting qualities of any but

the terminal third of the blade it were as well that they did not exist. It is desirable, then, that the trenchancy of the part concerned be heightened in the utmost. This is precisely the object of the peculiar shape of the blade now under consideration. A single point is insufficient, for the reason that it soon loses its keenness, whereas, the extended contact inevitable with an edge of low convexity is yet more unfitting, since it is less guidable and causes too much friction. The special configuration of blade here offered affords an efficient mean between these two extremes. If held fiddle-bow fashion (Fig. 4), as would seem the preferable manner for use in general, its incisive qualities are truly remarkable. With it such measures as Streatfield's counter-grooving of the tarsus, the intermarginal incision to receive the graft in restoration of the free border of the lid, etc., are especially facilitated. It has the added property of being able to cut nearly as well in *pushing* as in *pulling*

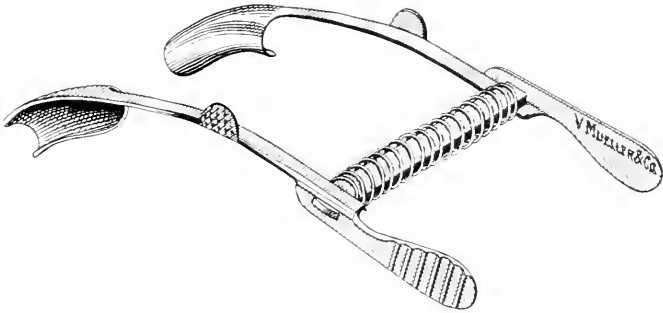


Figure 2.

—a veritable fiddle-bow action. That the qualities of form may be preserved after repeated sharpening, it is expedient that they appear exaggerated in the new instrument. It is made in two sizes, the smaller answering best where but one is procured.

The special features of the blepharostat (Fig 2) has reference to its lid-holders. For the rest, it is that modification of Melling's speculum that I suggested some years ago, and that has since been designated either as the "Beard" or the "Kratzmüller" model. The changes then instituted were the shortening of the distal arms, bearing the lid-holders, and the lengthening of the proximal, or handles, thus giving less leverage for the lids of the patient and greater for the fingers of the operator. Also the lightening of the whole instrument and rendering it more elegant and compact. The lid-holders, however, were of the fenestrated, or open, variety, with the connecting bars to rest beneath the lids; a most excellent instrument for all cases where a blepharostat is needed, except for

those operations wherein a rather free incision is made upward in the globe, as in extraction of cataract and in broad iridectomy. For these, particularly for the extraction, any speculum with a bar, or wirelike portion, beneath the lid, is a most pernicious contrivance. Many and many an eye has been sacrificed to it. The Landolt speculum is of the wire kind and has no bar to catch in the wound, but it does not hold the cells out of the way nor keep the expressed contents of the marginal ducts from getting into the wound. Only the old solid lid-holder of Weiss or Lawrence can do these things. Yet in all other respects the Weiss instrument is a very clumsy affair, the lid-holders being merely two straight gutters, adapted neither to the curve of the free border nor to that of the globe. Gaupillat and Lang overcame one of the defects in their blepharostats by making the bottom of the troughs convex, in order to fit the concavity of the lid margins. What has been done in the lid-holder here presented is that, in addition to the curve just al-

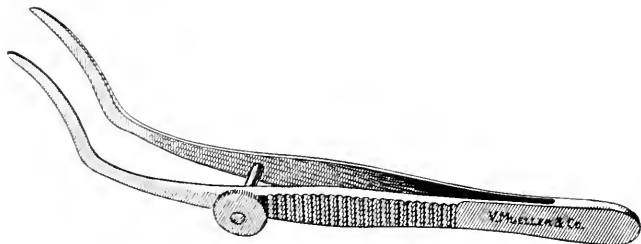


Figure 3.

luded to, the inner wall of the gutter has been made to conform to the curve of the globe, and the outer wall to that of the skin surface of the lid. Thus there is no undue pressure by the mid-portion of the lid-holder just back of the incision, and the tarsi are not bruised nor distorted. The inner wall of the trough is made decidedly lower than the outer, so that it will not press up in the fornix. Such pressure not only tends to produce spasm of the orbicularis, but also restricts the movement of the globe when the patient attempts to look downward, the very direction in which he should look during the operation. It must be remembered that, in many instances, the conjunctival sac of the cataract subject is atrophic and the cul-de-sac shallow. The comfortable way in which the lids are thus held apart reduces the inclination to squeeze to the minimum, and the eye can be rolled upward repeatedly without risk of eversion of the corneal flap, etc. The shape of this lid-holder renders it a trifle less easy to put in place, which is a small matter, but actually adds to the readiness with which the instrument may be removed, and this is a great deal. I first thought that it would be needful that

one should have a pair of such blepharostats,—a right and a left,—with a smaller, straighter lid-holder for the lower lid. Such is not the case. Indeed, the manner in which the instrument depresses the lower lid gives one unusual opportunity for manipulation of the fixation forceps.

The whole appliance is made of solid nickel; hence easily kept bright. The arms bearing the lid-holders are flat and can be easily and quickly bent in the fingers, so as to adapt the instrument to the varying prominences of eye and temple. This obviates any need

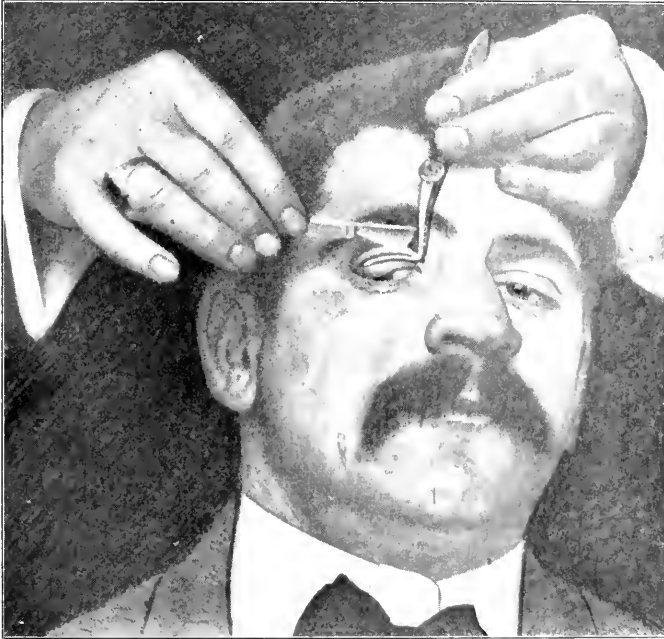


Figure 4.

of jointed arms, which were also a feature of the very ingenious Gaupillat speculum of some twenty years ago.

The advantages of the Mellinger principles, such as automatic locking, parallel separation of the arms, instant closing by pressing together the handles, or forcible opening by pressure on ends of slides, are all too well known to be dwelt on. It should be seen to that the spring is not too strong and that the ends of its wire are so disposed of as not to catch in the mechanism or in anything else.

The lid forceps (Fig. 3) is designed to facilitate the making of the intermarginal incision to which is transplanted the mucous, or cutaneous, graft for replacing the normal thickness of the free

border in electrical entropion. It serves to evert, to hold everted, and to fix the lid while the cut is being made. Moreover, it acts as an effective hemo-static clamp the while. Figure 4 is from a photograph of the instrument in actual use. The picture shows, besides, the mode of handling the knife herein described. The one forceps is equally applicable to the right or to the left eye. In the first instance the handle is situated at the nasal side, and in the second at the temporal. The instrument is also handy in electrolysis of the cilia and in median tarsorrhaphy.

All three instruments were brought to their present status in the factory of Messrs. V. Müller & Co. of Chicago.

OPERATIVE TREATMENT OF MYOPIA.

JOHN A. DONOVAN, M.D.

BUTTE, MONTANA.

Lens extraction in high myopia is yet comparatively rare in America. I submit the history of the following case, with no intention of reviewing the literature or entering a theoretical discussion, but to present the practical results that may be obtained in these cases.

Lottie W., age 13, student in the Paul Clark Home, family history negative, consulted me Jan. 28, 1904; manifest vision R. 12/200; L. 8/200; wearing R. —11.00 D. S.; L. —12.00 D. S. Used hyosein and found R. —14.00 D. S. \subset —2.00 D. Cyl. Ax. 180° V.=20/60; L. —21.00 D. S. V.=20/100.

February 2.—I dilated pupil and made small needle puncture in anterior capsule of left lens. This was followed by slight pain for two days. Six weeks later I again needled lens, this time quite freely, it being already smaller. No pain followed this. On May 15th the lens was nearly gone; vision then without a glass about 20/60. The vision of the left eye was then better without a glass than that of right with one. The father consented to have other eye operated on.

July 20.—I did similar operation on right eye, making small puncture in capsule at first. This one was followed by severe pain for three days, then subsided. After a lapse of two weeks, the anxious father in opening the eye hurt it with his thumb. This was followed by much lens swelling and severe pain, which cocain and dionin would not relieve as it previously had done. I extracted the lens with a hypodermic needle: pain subsided and in a few weeks more the pupil became clear.

December 3.—Manifest vision R. 20/50; with $+2.00$ D. S. \ominus -3.00 D. C. Ax. 180° , V.=20/30; L. 20/50; with $+2.00$ D. S. \ominus -3.50 D. C. Ax. 180° , V.=20/30. Choroid practically normal.

I will call attention to the original difference of 1.00 D. S. myopia before operation to an equal degree of hyperopia following it, or by reversing the correction giving -1.00 D. S. \ominus $+3.00$ D. Cyl. Ax. 90° , leaving the eye almost normal except for the astigmatism. She is now in school wearing $+3.50$ D. S. over these for near work and is a very happy child.

PARINAUD'S CONJUNCTIVITIS. WITH A REPORT OF THREE CASES.

E. C. ELLETT, M.D.

MEMPHIS, TENN.

The following cases of Parinaud's conjunctivitis have come under my notice and are recorded in chronological order:

CASE 1.—A. W., a negro boy, aged 6, was seen by me on Dec. 21, 1901, for an affection of the left eye of four weeks' duration, which was accompanied from the first by a swelling of the left side of the neck. The lids were swollen and the eye discharged mucopus rather freely. The bulbar conjunctiva and cornea were normal. On everting the lids the whole upper fornix was covered by twelve or fifteen large, distinct and flattened granulations. The tops of these granulations were whitish, as if recently cauterized with nitrate of silver (epithelial necrosis). The whole of the conjunctiva of the lower lid was thickened and roughened with granulations which were not so distinct or regular as those in the upper lid, but gave the lid a ragged appearance. The same white and opaque condition that was noticed on the tops of the granulations on the upper lids was seen both on and between the elevations on the lower lid. The cervical glands of that side were large and hard, but not tender.

This boy was under treatment about six weeks, during which time various methods of treatment of a cleansing and astringent nature were tried. Finally the lids were rolled, but without material benefit. On January 17 distinct fluctuation was felt in the cervical glands, which were incised and a large amount of pus escaped. The opening continued to discharge as long as he came for treatment. He disappeared from my observation about Feb. 1, 1902, and I have been unable to trace him. He was not improved.

At the first visit a morphological examination of the secretion

from the eye was made, and showed a few cocci. An agar culture gave no growth. On January 17 a culture was made from the cervical abscess and gave no growth. A culture from the eye at this date gave a growth of staphylococci and a bacillus resembling the Klebs-Loeffler bacillus, but it was not pathogenic to guinea-pigs. On January 25 another culture was taken from each, that from the eye showing the staphylococcus albus, that from the neck giving no growth.

A piece of the tissue composing the granulations was excised for histologic study, with the following result:

"Upon section the granulations are found to be composed of a loose network, infiltrated with leached-out blood discs and scattering leucocytes, interspersed with a varying amount of forming tissue, almost entirely round cells. Well-formed dilated blood sinuses show no endothelial proliferation. Deeper down capillaries are forming and new cells are forming groups around these to some extent. In certain areas, where the plasma cells are less in evidence, a reticulum, containing epithelioid cells, resembling that of a tubercle, but without giant cells, can be made out; small necrotic areas, showing nuclear fragmentation, but without caseation, are also found.

"Stained by Kuchne's method, single isolated corynebacteria are found.

"*Anatomical Diagnosis.*—Ill-formed granulation tissue."

CASE 2.—C. P., a white boy, aged 11, consulted me on July 10, 1904, for an inflammation of the right eye of nine days' duration. The conjunctiva of the lower lid was red and thick, and scattered over it were some whitish nodules about the size of the follicles in follicular conjunctivitis, but only seven or eight in number. They were deep-seated, causing only slight elevation of the surface. The surface of these nodules was white and opaque. They were situated in the palpebral conjunctiva, the fornix being free. At the inner canthus several similar lesions were seen on the caruncle, the semilunar folds and the bulbar conjunctiva above this. In the upper lid there were a few small nodules in the palpebral conjunctiva, which was inflamed. The central portion of the fornix was involved and showed the whitened nodules, smaller and more numerous than those of the lower lid. At the upper border of the tarsus and in the center was seen a large pedunculated granulation button, of firm consistency and with a whitish top. This was snipped off for study. There was enough conjunctival discharge to glue the lids in the mornings. The preauricular, angular and submaxillary lymphatics were all enlarged, hard and not tender. An agar culture of

the secretion from the lids was negative, and a second one, made a few days later, was also negative. The treatment used was a boric wash, a few drops of a 20 per cent. solution of argyrol three times a day, and ichthyol to the glands. In one month the disease had entirely disappeared.

The following is the histologic report: "Histologically, the sections show a uniform granulation tissue densely packed with round cells, staining intensely with nuclear stains. Contrast stains show practically no fibrous tissue, but a rather myxoid intercellular material. Some endothelial spaces are filled with cells, but the walls are well formed, and as in new growing tissue, endothelial proliferation must needs take place, there is nothing indicating anything more significant than granulation tissue. Compared with the other section in which I found a few corynebacteria, the granulation is much more dense and stable, showing none of the blood stroma the other did, but it also showed epithelioid cells and degenerating areas. Fixation having been delayed, no mitoses or other finer changes could be studied. The sections were stained by five different methods and no bacteria found."

CASE 3.—E. R., white, female, aged 11, was referred to me on Oct. 21, 1904, by her family physician, with a tentative diagnosis of follicular conjunctivitis. The right eye had been sore one week. The appearances were those of a follicular conjunctivitis of moderate severity, affecting the upper fornix almost altogether, the lower being but slightly roughened. The glands in the neck on that side were enlarged, those on the other side very slightly so. The day before I saw her the right pre-auricular gland had enlarged. There was a slight conjunctival discharge, a smear of which showed a few scattered cocci. The culture was negative. She was given boric acid and argyrol solutions. At first the conditions grew worse. On October 28 the subconjunctival tissue was thickened under the bulbar conjunctiva near the upper fornix, giving the appearance of fine sand or minute frog-spawn, appearing as a sharply defined patch and covered by normal conjunctiva. There were several superficial whitish plaques scattered over the surface of the conjunctiva in the fornix, probably covering areas of lymphoid hyperplasia, but little if any elevated from the surface. The pre-auricular and angular glands were more swollen, hot and tender. Ichthyol ointment was applied to the latter, and no further change made in the treatment till the patient was discharged cured on November 18.

For the histologic and bacteriologic examinations I wish to thank Dr. William Krauss and Mr. Paquin, city bacteriologist.

For the literature and a full discussion of this disease the reader is referred to an article by Verhoeff and Derby in the *Archives of Ophthalmology* for July, 1904. They were able to collect from the literature 23 cases, including one of their own, to which may be added three reports quoted in the *Ophthalmoscope* for November, 1904, namely Stirling and McRae, *Montreal Medical Journal*, August, 1904, and *Ophthalmic Review*, October, 1904. Matys, *Zeitschrift F. Augenheilk.*, October, 1904, and Stratford, *Lancet*, October 5, 1904; and one case reported by Joeh in *Die Ophth. Klinik*, No. 2, 1904 (abstract in *Ophthalmology*, October, 1904). Of these cases seven have been reported in this country, which, with my three, make ten, but others have been observed and will soon be reported. From these abundant descriptions an accurate idea of the disease may be obtained, and it will be seen that the cases here reported are fairly typical. Prominent features of the disease are the fact that it is nearly always monocular, and the glandular involvement is only seen in the diseases from which it can be easily differentiated (chancre of the conjunctiva, diphtheria), except tuberculosis, to which it bears a strong clinical resemblance, but the diagnosis can be made by histologic examination and the course of the disease. Parinaud's original description as quoted from the Darier in the *Ophthalmoscope* is as follows: "The conjunctiva is the seat of red or yellowish vegetations, semi-transparent at first, becoming opaque later, and sometimes reaching the size of a very large pinhead. Beside these fleshy granulations, there are smaller ones, quite yellow, which at first made me think of tuberculosis of the conjunctiva. The cornea seems to have no tendency to be affected. There is some mucous secretion with fibrinous deposits, but no real suppuration. The eyelids are swollen, firm to the touch, and present irregular nodosities. There is but little tenderness of the conjunctiva and the glandular engorgement is rather indolent. The disease is eminently infectious and always causes suppuration of glands: it is almost always unilateral and seems to be transmitted to man by animals."

That it does not always cause suppuration of the glands is evident from the published reports of cases referred to. Closely resembling tuberculosis of the conjunctiva, it has been shown to be a separate disease (Jackson, the *Ophthalmic Year-Book*), and increasing familiarity with it renders the diagnosis easy.

As for treatment, excision, expression and other vigorous measures were not nearly so efficient in my cases as the milder measures above detailed, and I would not favor them except for the purpose of procuring a specimen for microscopic study. When

excised there is not the tendency for the granulations to return that is characteristic of the palpebral form of spring catarrh. None of my cases was seen very early, but it seems to me that an elevation of temperature would be apt to occur when the disease first attacks the glands.

The full discussion of the whole subject by Verhoeff and Derby render a repetition of the process unnecessary.

It was thought by Parinaud that the disease was of animal origin, since no vegetable organisms have been found in the secretions, but such an idea is but a theory, and no proof of it has been adduced.

So far the results of bacteriologic examinations in the disease have been practically negative, while microscopic features are practically identical with the findings in Cases 1 and 2. In these respects, therefore, the disease lacks individuality, but clinically the picture is very characteristic. The findings of corynebacteria in Case 1 is probably accidental, the organism presumably being the bacillus mentioned as showing in the culture from the same case. It was probably in the xerosis bacillus.

Gifford thinks the disease starts as minute abscesses of the conjunctiva, which break down to form ulcers, and from these ulcers exuberant granulations spring up and form the granulations which are characteristic of the disease. The granulations in my cases were of a firmer consistency than one would expect if this were the cause, and the slight ulceration which I noticed affected both the tops of the granulations and the conjunctiva between them. Suffice it to say, that the appearance did not seem to conform to this idea, and I am of the opinion that we have to deal with a specific disease whose cause is as yet unknown.

Randolph Building.

THE VISUAL AND OCULOMOTOR NEURONS.

G. C. SAVAGE, M.D.

NASHVILLE, TENN.

The visual neurons, judging from a physiologic point of view, must be peculiar, in that each central cell must send out a double axone, or two sets of fibrils, the one set destined to terminate in one retina, while the other set finds its termination in the other retina. It is reasonable to conclude that corresponding retinal points have a common brain connection. Beginning with a single cell in the cuneus, the retinal connections, according to this the-

ory, are made by means of two fibers going from it and keeping company until they reach the optic chiasm, at which point they separate, one fiber passing into the optic nerve of the corresponding side, while the other goes by way of the chiasm to the optic nerve on the opposite side. Thence each fiber pursues its individual course to its retinal termination. The terminal in one retina corresponds with the terminal in the other only because these two are connected with one brain cell. In this way can be accounted for the fact of a double impression with only a single sensation. The whole of the macula of the one eye corresponds with the whole of the macula in the other because of the fact that, point for point, there is a common brain connection. The vertical meridian of one retina corresponds with the vertical meridian of the other retina, point for point, because the two have a common connection in the cuneus. The same may be said of the two horizontal meridians and of all corresponding meridians between the vertical and horizontal.

Pathology has demonstrated the fact that the temporal half of the right retina and the nasal half of the left retina are connected with the right cuneus, and that the nasal half of the right retina and the temporal half of the left retina are connected with the left cuneus. Common brain connection, therefore, determines corresponding halves of the two retinas. Reasoning from the whole to the part the logical conclusion is that common brain connection determines corresponding retinal points.

Pathology has shown that the line that separates the right retinal half from the left half occasionally lies in the vertical retinal meridian, and therefore bisects the macula; but still more frequently pathology has shown that this line of separation falls to either the right or the left of the two maculas—far more often to the right than to the left. In the first class of cases one-half of each macula is connected with the right side of the brain and the other half of each macula is connected with the left side of the brain. In those cases in which the line of separation is to the right of the macula in each eye, then both maculas, in their entirety, are connected with the left side of the brain. In the small number of cases in which the line of separation is to the left of the macula in each eye, then both maculas are connected with the right side of the brain.

There is a very small number of people who have antipathy to binocular single vision, and in all of whom fusion is utterly impossible. In such persons there exists always one or other of the several kinds of heterotropia; and usually, the vision is about as

sharp in the one eye as in the other. In such cases the logical conclusion is that the line of separation in one retina is to the right of the macula, and that the line of separation in the other retina is to the left of the macula, thus showing that one macula is connected with one side of the brain, and that the other macula is connected with the other side of the brain. No pathology in a case of this kind, involving one optic tract or one cuneus, has ever come under the observation of the writer, but he is just as firmly convinced as to what the results would be as if he had seen such a case; and that is, the macula would be free in one eye but involved in the other. Such a person, and only such a person, would be "right-eyed" or "left-eyed."

There is some condition that predetermines for every individual whether or not he shall be right-handed. If half of each macula is connected with each cuneus, the possessor of such eyes must be ambidextrous; if both maculas are wholly connected with the left cuneus, that person must be right-handed; but if both maculas are connected with the right cuneus, that person must be left-handed.

"Right-eyed" people and "left-eyed" people, who are such because they have no power of fusing images, usually select one eye for all visual purposes, although they have the power to use either eye alone. If the macula of the predominant eye is connected with the left cuneus that person must be right-handed; if with the right cuneus, he must be left-handed.

The visual neurons are the first afferent neurons to be called into use, after birth, and the visual centers probably dominate all volitional centers, and may be, many others besides. If the common center for the two maculas is in the left cuneus, not only is right-handedness predetermined, but the speech center is thereby fixed in the left hemisphere. When the maculas are connected with the left cuneus, the left cerebral hemisphere is made predominant; when the maculas are connected with the right cuneus, the right hemisphere is made predominant.

OCULOMOTOR NEURONS.

The structure of the voluntary oculomotor neuron is after the pattern of the visual neuron, in that one of the fibers from each cell remains on the same side of the median plane of the head, while the other fiber crosses to the other side. The two fibers, in the case of the motor axone, remain together until they reach the involuntary motor centers at the base of the brain. Here they part company, one fiber helping to constitute the proper motor

nerve on the corresponding side, while the other fiber crosses from the basal center on the one side to the basal center on the other side of the meridian plane, and from there on helps to form one of the motor nerves on the opposite side. The one fiber goes to a muscle belonging to one eye, while the other fiber goes to a muscle belonging to the other eye. To illustrate: Each cell of the fourth conjugate center, the one controlling the right sweep of the two eyes, sends a fiber to the left internus and a fiber to the right externus. When this cell discharges the stored neuricity an impulse equally strong goes to each of these two muscles, thus exciting harmonious rotation of the two eyes toward the right.

The supreme law of binocular single vision is the law of the corresponding retinal points. Two retinal points, to correspond, must be connected by means of nerve fibers with one common cell in the cuneus, so that a double impression may excite only a single sensation. That corresponding retinal points may be properly related in any given rotation, so that each may receive one of the two images, it would appear that the central cell of every voluntary motor neuron must be connected with two muscles. If possessed of normal tonicicity, these two muscles, each supplied with an equal quantity of neuricity, would effect the most harmonious rotation; but if one muscle of the pair has greater tonicicity than the other, harmonious rotation could not be effected by a voluntary center alone. The eye possessing the muscle wanting in tonicicity would lag behind its fellow, if there were no other than the volitional source of neuricity. The lagging behind would produce double vision. To prevent this, nature has provided other neurons not under the control of the will, but dominated by the fusion faculty of the mind. The normal condition of these neurons is rest, but they stand ready always to discharge neuricity to a muscle that is wanting in tonicicity, to supplement the power sent from the volitional center.

The fusional neurons differ from the volitional neurons structurally in that their centers are at the base of the brain, and that each of these centers is connected with one muscle only.

EXOPHTHALMOS AND SPHENOIDAL ABSCESS.

H. V. WÜRDEMANN, M.D.

MILWAUKEE.

I have ever contended that the ophthalmologist should not only have an exceptional knowledge of eye diseases and their treatment, but that he remain a well-informed general physician, though

to be such it is not necessary that he should take general cases in treatment. In fact, such is highly inadvisable, not only from the patients' standpoint, but that of the profession generally. However, I am one of those who considers that the ophthalmic specialist is better qualified if he does not limit his practice solely to the eye and its diseases, but also takes for consultation and treatment cases whose complaints are referred to any part of the head, more especially the upper air passages, i. e., he should combine with ophthalmology the kindred specialties of rhinology and otology, and should keep well up with the advance of neurology, in so far as the cranial diseases and complications are concerned. He should, in fact, be a physician specially skilled in diagnosis and treatment of the diseases of the head.

In support of this contention I beg to offer the following brief history of a case whose complicated symptoms might have been ascribed by a "mere specialist" to many causes. The case itself may be esteemed a contribution to the literature of sphenoidal disease, more especially its connection with exophthalmos.

E. C. D., aged 20, college student, had always been particularly strong and healthy, had not been troubled by nasal catarrh or other local diseases; had worked for one season on the "drive" in the lumbering regions. His father is a physician from whose nose I had in previous years removed an enormous number of nasal polypi, together with the middle turbinals from either side, with resultant permanent cure; otherwise there is no special pathologic family history. On April 14, 1904, he was brought to my office by Dr. E. E. Couch, giving history of having had influenza two weeks before; ten days before he saw double, and the left eye protruded. There was slight nasal discharge, principally from the left side. He had fever, frontal headache and vertigo. The exophthalmos increased and the other symptoms, except the nasal discharge, which diminished, became worse until the time of examination.

Status Præsens.—Decided left-sided exophthalmos, eye protruding down and out; V. R.=6/v, L.=6/xxxvi. Diplopia to red glass, but not annoying, or, rather, not perceived for ordinary vision. The electric transillumination test of the maxillary, frontal and ethmoidal sinuses was negative. Ophthalmoscopic examination shows left optic disc hyperemic, and edges edematous, i. e., slight neuritis. No other changes. Face flushed. Temperature 104°.

Examination of nasal passages shows a coryza, with thicker discharge on left side, some of which adheres to the middle and inferior turbinals. Microscopic examination shows mixed infection of streptococcus and a bacillus, probably the influenza bacillus.

He was sent to Trinity Hospital for observation and treatment, was ordered frequent nasal douches of Seiler's solution, given gram doses of sodium salicylate every two hours, and in forty-eight hours was much improved, the temperature dropping to 100° , but the exophthalmos continued, and, in fact, the eyeball was more protuberant.

Owing to the diagnostic point given us by the somewhat one-sided nasal suppuration, I decided to explore the sphenoidal sinus, and, therefore, under cocain anesthesia, passed a strong probe into the ostium, through the left side, and was rewarded, upon withdrawal, by a flow of pus and an expression of relief from the patient regarding the feeling of pressure. I thereupon passed in a canula, releasing about a teaspoonful (4.00) of pus (which was found to contain streptococci), enlarged the opening with biting forceps, and syringed it out with Seiler's solution, followed by injection of 50 per cent. argyrol. This cleansing was done twice a day for several days; the injection of Seiler's solution into the nasal passages by a soft rubber syringe being done every two hours by his nurse.

April 18 (four days later) the exophthalmos had disappeared, there was no diplopia to red-glass test, V. R.=6/v, L+6/vi. Left fundus apparently normal, temperature normal, no headache nor other symptom. April 20 V. R. and L.=6/v, no diplopia to any test.

April 27 returned home, with instructions to use Seiler's solution several times daily and a spray of acetozone and chloretone in oil. He returned one week later, when all structures were found about normal, and since that time has pursued his studies without relapse.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JANUARY, 1905. VOL. XIV. No. 1. NEW SERIES

Editorials.

ANNOUNCEMENT.

Beginning with this number of the OPTHALMIC RECORD space will be given each month for critical reviews of articles pertaining to ophthalmology appearing in journals published in this country and abroad. It is not intended that these reviews shall be mere abstracts, as they will be accompanied by comments made by members of the editorial staff who have charge of this department. In this way the readers of the RECORD will have brought to their notice many of the most important articles that are contributed to ophthalmic literature. Beside this feature there will also appear editorials of interest to the profession, and the usual number of original articles and society reports will be published as in the past.

REMARKS ON THE IRREGULARITIES IN THE FORM OF THE PUPIL.

The ophthalmic surgeon who confines himself to the examination of patients who present themselves at his office and at the eye clinic refers all irregularities of the pupil, perhaps without exception, to the results of inflammatory reaction, traumatism, or congenital anomalies (coloboma and retention of remnants of fetal pupillary membrane). The fact that irregularities can exist without being due to the products of inflammation is often unrecognized; however, when the innervation of the iris is known and understood, the possibility of such irregularities of the pupil becomes apparent.

The dilatator pupillæ muscle is innervated by the long ciliary nerves which have their origin in the cervical sympathetic. Of these two nerves, the outer innervates the upper outer half of the iris; the inner, the lower inner half. Paralysis of either of these nerves separately would produce a partial miosis, causing an ir-

regularity of the pupil in the form of a flattening of the upper outer or inner lower margin of the pupil, according as the outer or inner of these nerves was involved. The innervation of the sphincter pupillæ is by means of a number of small branches from the ciliary ganglion. Lesion of one or a number of these branches, or of their nuclear origin, would produce moderate mydriasis of that part of the pupil corresponding to the portion of the sphincter pupillæ affected.

The neurologist has an opportunity to see many cases of irregular pupil from affection of parts of the fibers which go to supply the two muscles of the iris, which never come before the ophthalmic surgeon, since such disturbances are more common in patients suffering from disease of the central nervous system. I have no doubt that the irregularity of the pupil of the nature referred to is often unrecognized by the ophthalmic surgeon, even when it comes before him, because it is much less pronounced than are the irregularities due to inflammation.

The characteristic of irregular pupils due to the cause under consideration is that part of the margin of the pupil is flattened or straightened instead of holding its normal curve. Sharp angles, such as are present when posterior synechiæ exist and a mydriatic has been used, are never seen. In case of lesion of one of the long ciliary nerves, mydriatics cause the irregularity of the pupil to become more apparent, since the paralyzed portion does not dilate to the same extent as the non-paralyzed portion, but the dilatation is sufficient to enable the observer to exclude posterior synechiæ. The effect of mydriatics is not entirely abolished in the paralyzed portion, but it is lessened. Miotics, on the other hand, obliterate the defect. In lesions affecting some of the branches that supply the sphincter pupillæ, mydriatics will produce dilatation with a circular pupil, obliterating the deformity, while miotics make the deformity more pronounced. The effect of miotics in the paralyzed portion is lessened, but is not entirely abolished, because of what is supposed to be the direct effect of the drug on the muscle-fibers.

The recognition of this form of pupil is important to the ophthalmologist as well as to the neurologist, as, when it exists without grave disease of the central nervous system, it is almost always a forerunner of such disease, which may affect the cord, the cerebrum, or both, as in tabes, general paresis, and multiple sclerosis.

Piltz divides irregularities of the pupil not due to synechiæ into two classes, namely, changing and constant. He has observed the first form in progressive paralysis and in katatonia; the second form in progressive paralysis, tabes, and brain syphilis. The in-

mates of a Swiss asylum for the insane observed by him presented irregular pupils in 42 per cent. Of sixty-two cases of tabes, 29 per cent. presented irregular pupils.

Jaffray regards irregularity of the pupil without synechiæ as often the very first sign of the development of the Argyll Robertson pupil, and he has observed it as an early symptom in the development of ophthalmoplegia interna.

Intraocular disease may cause irregularity of the pupil without synechiæ, as has been observed in some cases of intraocular tumor. Intraorbital disease may occasion it, but the causes in these cases can be readily determined.

A record of the condition of the pupils regarding their reflexes and irregularities is a valuable item in the history of every case of eye disease.

J. W.

OPHTHALMOLOGIST'S SEAL FROM ANCIENT ROMAN COLONY.—Professor Ghirardini exhibited at a recent meeting of a Padua scientific society a seal which had been discovered in an ancient tomb at Este, the old Roman colony of Ateste. It is a fourfold seal, being square, with a different inscription on each side, signed with the name of the owner, Esecagato, a physician of Greek origin. Each one of the inscriptions is the formula for some specific for eye affections. Two are for conjunctivitis and one for affections of the eye in general. The inscription was designed to be stamped on the collyrium made according to the directions of the formula, shaped, dried and hardened. Two fragments of these collyrium sticks were found with the seal, still bearing the imprint of the stamp and accompanied by some surgical instruments.—*Journal of the American Medical Association*.

SPEER, in the *Therapeutic Gazette*, July 15, 1904, calls attention to the danger of using eserine (physostigmine salicylate) in debilitated persons. His use of the remedy in ophthalmic practice goes through several years, and in two of his cases he observed startling effects. In one of these cases he made a local application of the drug to the nasal mucous membrane for hay fever. The other was an ophthalmic case in which he desired a contraction of the pupil. In both of these cases, shortly after the application, the patients became "deathly white, were covered with a clammy sweat, and very cold." Consciousness was lost in one case temporarily. In both cases there was marked debility following prolonged illness.

Correspondence.

A SIMPLE INSTRUMENT FOR REMOVING GRANULATIONS IN TRACHOMA—FINAL REPLY TO DR. STEVENSON.

To the Editors:—Dr. Stevenson quite misunderstands my remarks to his new instrument. It would certainly be nonsensical on my part to suppose that "any stroking of the conjunctiva" is performed by *his* instrument. I merely said that his way of *inserting* the instrument was essentially different from the original one.

Besides, I *am* able to get Kulnt's expressor well up into the fornix *without* everting the upper lid; after pressing successively I then evert and test results: in case granulations remain, I remove them afterwards or the next day. I believe this mode of treatment is exactly as satisfactory as Dr. Stevenson's and less painful for the patient.

DR. E. H. OPPENHEIMER, Berlin.

BOWMAN LECTURE.—As might have been safely predicted, a crowded audience of physicians and ophthalmic surgeons assembled in the rooms of the Ophthalmological Society on November 3 to listen to the Bowman lecture on "The Visual Cortex" by Dr. F. W. Mott, F. R. S. The lecturer gave a masterly exposition of the comparative anatomy of the region in question, illustrating his remarks by lantern slides and numerous diagrams. At the close of the lecture Mr. Jonathan Hutchinson proposed a hearty vote of thanks to Dr. Mott. This was seconded by Dr. Tempest Anderson of York and adopted with acclamation by the society.—*Ophthalmoscope*, November, 1904.

NETTLESHIP PRIZE MEDAL.—On November 3 the Nettleship Prize Medal was presented with all due ceremony to Mr. Priestley Smith of Birmingham. In making the award, the President of the Ophthalmological Society, Mr. John Tweedy, spoke in terms of the highest praise of Mr. Smith's work, particularly instancing his researches in glaucoma. Mr. Priestley Smith expressed his appreciation of the honor paid him in a few characteristically modest sentences. Our cordial congratulations may here be formally added to those rendered by the medical profession, both special and general, on this bestowal of the blue riband of British ophthalmology.—*Ophthalmoscope*, November, 1904.

Reviews.

WHAT ARE THE ESSENTIAL CHARACTERS OF SPRING CATARRH?

BY DR. A. FORTUNATI.

[Reviewed by Casey Wood, M.D., Chicago.]

In all the range of ophthalmic practice there is probably no disease that is more shrouded in mystery than vernal conjunctivitis. Its signs and symptoms have, indeed, been studied with great care both in this country and abroad, but men have in vain sought to account not only for its annual recrudescence during the hot months, but for its apparent cure on the approach of winter. Any light on its pathologic characteristics is of importance and well worthy our study.

Led by the studies of Sanfelice and others of the relation of the blastomycetes to bodily lesions, and influenced especially by the work of Parisotti on blastomycetic forms in pterygium, Fortunati¹ determined to examine more critically than had yet been done the growths and deposits found in a well-marked case of spring catarrh. He suspected that these yeastlike bodies might be implicated in the pathologic processes that occur in the local deposits. He determined not only to make the usual cultures direct from some subject of the disease and to inoculate animals (as Fuchs had done), but to infect the human eye, if subjects were obtainable.

In August, 1899, the opportunity occurred. A man presented himself with a well-marked attack of typical, vernal catarrh, showing particularly the pericorneal neoplasms and other characters of the bulbar variety. Having excised the more prominent of these, he hardened them in 10 per cent. slightly acidulated sublimate celloidin. Stained sections revealed what he and other bacteriologists, on examination, regarded as blastomycetic forms.

Excised nodules from seven other patients, spread on various media, resulted in the isolation of pure cultures of two varieties of blastomycetes, one round and the other oval. Both proved to be pathogenic when rabbits, dogs and monkeys were inoculated by them, the round form inducing the greater irritation in rabbits and dogs, while the oval form was the greater irritant in monkeys. The

1. A. Fortunati: Ricerche sperimentali sulla etiologia del catarrho primaverile. (Nota preventiva.) *Archivio di Ottalmologia*, p. 82, October, 1904.

extensive tests described showed that a small quantity injected beneath the conjunctiva caused a slight local lesion without any influence on the general health.

When Fortunati had fully established the harmlessness of the two varieties of blastomycetes he tested their pathogenic action on human subjects. He succeeded in persuading two young women and a lad of 15 to submit to these tests. He gave the relatives of the latter a certificate that he would hold himself civilly responsible for any damages to the eye that might result from the artificial infection. One of the women was inoculated with the round blastomyces at three points near the sclerocorneal junction and at three points in the palpebral conjunctiva. The reaction from these injections was very slight and not a trace of the operation could be made out at the end of the second week. The other woman was inoculated with the oval variety.

The chief interest and importance, seems to the reviewer, undoubtedly to lie in the human studies. Almost all that we know of experimental pathology in the department of ophthalmology hinges on experiments with the lower animals, and, while this source of precise knowledge must, in the nature of things, continue to be our principal one, it is fortunate when experiments in practical pathology can be made under circumstances that most closely imitate the pathologic states with which the surgeon is called to deal.

The facts thus observed are described in detail. They establish at least two facts, namely, that the nodules of spring catarrh contain two varieties of pathogenic blastomycetes, a round form setting up a local inflammation and an oval form inducing more serious lesions in the lower animals, especially in rabbits; and, secondly, that the latter variety inoculated in the human eye is capable of producing nodules which recur during the warm months, while the round form may be regarded as without effect on the human eye. But it must be acknowledged, Fortunati remarks, that there is still a missing link between the form and evolution of the artificial affection and the "natural" disease. The blastomycetic nodules are soft, rounding, something like a mulberry in shape, delicately vascularized and distinctly limited to the plane of the tissues from which they spring. The eye does not exhibit the aspect characteristic of the florid phase of spring catarrh. Nothing is to be seen of those large, turgescient, serpentine vessels which pass from the ocular conjunctiva to supply circulation to the gelatinous nodules in the "natural" affection. The bluish-white, milky film over the palpebral conjunctiva is also absent. There is, further, none of the conjunctival congestion, itching and other forms of ocular irritation so an-

noying to those affected with spring catarrh. During the quiescent period Fortunati observed none of those characteristic appearances at the limbus which render the diagnosis of the affection possible even if there are no growths and no conjunctival injection. The clinical course of the two affections further establishes that they are two distinct morbid entities which resemble each other only in the fact of their recurrence during the warm season. These conclusions result from a dispassionate study of the facts. Fortunati, indeed, makes no pretension that he has discovered the etiology of spring catarrh, but merely believes that he is on the right road to such a discovery. The parasitology of these growths must be studied more completely to determine whether other varieties of blastomyces may not have escaped discovery. Experimental research is also needed to determine whether inoculation of some other blastomyces, perhaps under other conditions than those already described, may not vary the clinical course of the artificial affection, causing it to resemble still more the spontaneous form. The structures of the artificial nodules in man should be studied histologically to determine the identity or non-identity of their tissues with the growths of true spring catarrh. The botany of the artificial nodules should also be studied, and the varieties of blastomyces found in them should be cultivated.

Another subject for study is the meaning of the seasonal variations in this disease and whether its recurrence does not bear some relation to the biologic evolution of the blastomyces, modified, perhaps, by the time when the primary infection took place.

The inoculations were made in May; by October the eye had resumed its normal aspect. The lad was inoculated in one eye with the round variety and in the other with the oval blastomyces. The reaction was more pronounced in the latter case. The eye inoculated with the round variety resumed its normal aspect in less than three weeks, but the hyperemia and nodules following inoculation of the oval variety persisted unmodified until the end of September, when they abruptly vanished. The important question was whether the ocular lesions would recur with the return of warm weather. The woman inoculated with the round blastomyces exhibited no lesions, but the one inoculated with the oval variety presented an acute conjunctivitis early in the spring, and later the eye became congested and two red and prominent points developed, but they subsided again without the formation of nodules, the eye becoming practically normal in two weeks.

The findings in the eye of the lad are much more important. As warm weather came on, the eye that had been inoculated the year be-

fore with the round variety developed a diffuse hyperemia, but there was no photophobia, the secretion was scanty, and the ocular coverings shortly afterward presented their usual normal appearance. A few days later the other eye, that had been inoculated with the oval variety, presented the same symptoms, but in much more acute form, the eyeball being painful, there was marked photophobia, with lachrymation and considerable catarrhal secretion. On the next day there was pronounced edema of the cornea, which persisted unchanged for a week, while the conjunctival irritation gradually subsided. When the edema disappeared three nodules developed exactly at the points where the blastomycetes had been injected. There was no trace of granulations on the palpebral conjunctiva. These nodules persisted unmodified during the summer and subsided abruptly toward the first of September. They did not cause pain.

Fortunati was unable to see his female subjects again, but he found that the ocular lesion *recurred the following year* (with the advent of warm weather) in the eye of the lad that had been injected with the oval blastomyces. The process was not so pronounced and was more transient, the eye being completely restored to normal by the end of July. The attacks at first simulated a vesicular kerato-conjunctivitis. During the summer of the following year no abnormal process could be discovered in the lad's eyes and not a trace of irritation or infiltration could be detected.

Another question for study is the individual susceptibility to the disease, especially as related to possible disturbances in nutrition (or the dyscrasias) which afford a favorable condition for the development of the infection. In short, in connection with this mysterious disease, a number of problems press for solution, all of them difficult of solution. These must be cleared up, however, before we can arrive at conclusions which will establish a solid foundation for the etiology of this remarkable form of eye disease.

Fortunati presents these results of his work as a *nota preventiva* and promises to give us the results—if there are any—of further investigations of the subject.

In perusing his article one is struck by the limited bibliography that the writer, in common with so many Italians, seems to have been able to take advantage of. Some forty references are mostly French, Italian and German. Two are English and one American. The failure to read any of the articles on vernal conjunctivitis that have appeared in American ophthalmic periodicals during the past few years is all the more unfortunate, as the investigations of a

number of Americans, especially those of May, Gifford and Posey,² are of considerable value. As regards blastomycetic diseases the authorities are almost exclusively Americans; indeed, a history of dermal and mucous blastomycosis could not be written if the researches of Gilchrist, Hyde, Montgomery, Ricketts and other American investigators were omitted. The first essay on blastomycosis of the eye, "Blastomycosis of the Ocular Structures," happens to have been written (*Annals of Ophthalmology*, January, 1904), by the reviewer. All the foregoing investigations and studies of the subject have a decided bearing on the points at issue.

Without going too deeply into the subject, one should not forget the fact that in every reported case of blastomycetic dermatitis affecting the lids there was a manifest indisposition to attack the conjunctiva, and when, after months of exposure to the excretions from the blastomycetic abscesses, a conjunctivitis of the infective variety was set up by the process, the resulting infection bore little or no resemblance to the lesions of vernal catarrh.

One character they do, however, possess in common. Both palpebral and conjunctival blastomycosis, as well as vernal conjunctivitis, are invariably modified, if not entirely cured, by the Röntgen ray. This was, so far as we know, first definitely pointed out by Frank Allport,³ who used the remedy in at least one typical case with marked success. In Allport's case the symptoms disappeared and the usual local appearances almost approached normal after a month's treatment during the period of greatest heat and maximum recrudescence. The patient was apparently well before the end of August in a locality where she had previously exhibited all the well-known signs of the disease, and there was no recurrence of the disease during the following summer.

No doubt, in the studies which Dr. Fortunati makes in future he will give himself the advantage of both British and American observations of this curious affection.

TUBERCULOSIS OF THE LACHRYMAL GLAND.*

BY DR. A. FORTUNATI.

[Reviewed by Wm. D. Hall, M.D., of Boston.]

In view of the infrequency with which tubercular conditions as affecting the lachrymal gland are met with, Dr.

2. See the Transactions of the Ophthalmic Section of the American Medical Association, p. 12, 1903, and the discussion of the report on p. 36.

3. Allport: A Case of Vernal Conjunctivitis, *OPHTHALMIC RECORD*, October 1903. See also a letter from the author in the same journal for December, 1904.

* *Annali di Ottalmologia*, vol. xxxviii, Fasc., 10-11, p. 750.

Fortunati has considered it to be worth his while to add a case of his own to the few already observed and to briefly review the already existing literature. His experience has been similar to that of others, and removal of the part of the gland containing the tumor was due to misapprehension as regards its true nature. Having been put on the right track by the examination with the microscope, however, the histology of this particular growth has been carefully worked out, and, although the report may be deficient bacteriologically and in data that might be derived from animal experimentation, still enough facts are at hand to justify a revision in diagnosis, thereby giving the growth its proper classification among this very interesting group of lachrymal tumors. The patient, a woman, 62 years old, had been more or less annoyed for about two years by the presence of a swelling at the external part of the upper left lid due to a small tumor between the globe and the outer part of the orbit. There was marked ptosis and diplopia. The lid, which covered more than half of the cornea, could be raised by energetic action of the levator. The diplopia would disappear on fixation for distant objects. There was down and inward rotation of the globe. Inflammatory reaction of surrounding tissues was absent. Preauricular glands were not enlarged, neither were the parotid nor submaxillary. Nothing abnormal was noticed at the externo-palpebral region of the right side. The naso-pharyngeal and nasal cavities were normal, as was also the urine. A general physical examination revealed nothing of note. The health was and always had been excellent. The family history was excellent also, the mother, brothers and sisters being still alive and in the enjoyment of good health, although the father had died of pneumonia. There was no history of hereditary disease either directly or collaterally. The growth seemed to be hard but elastic, smooth, painful on pressure, movable and not attached to surrounding tissues. Considering it to be a fibro-adenoma, it was excised, which was followed by an uneventful healing process. The portion excised had the form and size of a large almond, the surface being somewhat nodulated except where it was in contact with the roof of the orbit, which was smooth. The surface of the section appeared as marbled through the presence of whitish striae, irregularly interwoven, thereby forming a reticulum, within the meshes of which were compresses, grayish masses of varying size. In other places are to be seen yellowish islets with poorly defined outlines and prominent little nodules irregularly disseminated. The specimen was placed in "Zenker," passed through iodine-alcohol and progressive alcohols, then embedded in paraffin. The stains used were hematoxylin and eosin.

borax-carmin, etc. Microscopically the sections, variously stained, were found to show evidences of degeneration, in some places so extensive as not to permit the structure to be recognized. The connective tissue prolongations from the internal fascia of the capsule, which separate the acini from one another, showed unmistakably hyalin degeneration and small-cell infiltration. In those places where the acini could still be recognized, cloudy swelling of the individual cells could be made out, the protoplasm being granular and staining badly, while in the lumen of the acinus there appeared to be small-cell infiltration. In addition to these appearances there were places where the degenerative process seemed to be more advanced, the entire lumen being filled with a finely granular protoplasmic mass, around which the strongly colored nuclei were so disposed as to give the impression of a single cellular element, a giant cell. Higher magnification, however, demonstrated a membrane isolating the cells, but the tendency to merge their protoplasm into a single mass was more than evident. In other places the acini and gland tubules had entirely disappeared, being replaced by flattened cells with clear and finely granular protoplasm, with large, oval, poorly staining nuclei. These cells, evidently epithelioid, are not only seen united in groups forming true nodules, but also are scattered through the connective tissue framework. It was difficult to determine whether these cells were produced by simple division of the fixed connective tissue cell or a gland cell which has taken on an epithelioid form. In other nodules the epithelioid cells have entirely disappeared, having been overwhelmed by dense infiltration of leucocytes. In the central part of the epithelioid groups in full development, there appear large cells, roundish in form, with poorly staining protoplasm, with large oval nuclei at the periphery, resembling the section of an acinus of a gland. A characteristic structure identified them as the typical giant cell. The appearance of the nodules became greatly changed after they had undergone fatty degeneration. These were identified by the presence of clear areas, which took the stain badly, fragments of nuclei and masses of chromatin and surrounded by discolored and abnormal epithelioid cells in course of evident degeneration. As regards the changes in the vessels: those near the acini, where the degenerative process was but beginning, appeared normal; those of the nodules showed a restricted or occluded lumen, with thickened and hyaline walls. There was endarteritis of the larger vessels and small-cell infiltration of the external coat. Search for Koch's bacillus by methods of Ehrlich and Ziehl gave negative results, which is not at all surprising considering the inhibitory action which the bichromate of potash

probably exerted on the staining qualities of this bacillus for anilin colors. The pathologic complex seems to be sufficient to warrant a diagnosis of tuberculosis, although it is certainly a matter of regret that the bacillus was not found and that it was not possible to undertake animal experimentation. By looking up the literature of this subject Dr. Fortunati has been able to collect about thirteen reports of cases similar to his own. It is to be regretted that the histories of some of them are more or less deficient in important points. Eleven of these patients were females, seven were young adults, and in five the condition was bilateral. In a majority of the cases there were indications of constitutional disturbance, indicated by dullness at the apices, hemoptysis, signs of scrofula, modifications in resonance, etc. The microscopic examination demonstrated in ten of the cases a typical tubercular structure, as indicated by tubercular follicles, epithelioid cells, small-cell infiltration and giant cells. Two were doubtful and one patient refused operation. Typical bacilli were found in five.

When one considers the facility with which wandering germs can arrive at the parenchyma of the gland, which lies in direct connection with the conjunctival sac, with a surface so open and exposed to infection, carried there by dust and dirty fingers, it is surprising how few cases of tuberculosis of the gland are met with. And what is still more surprising is the relative immunity of this gland to infection, considering the ease with which pathologic germs provoke inflammation of the conjunctiva and tunics of the globe. This relative immunity to infection greatly resembles that which is possessed by the salivary glands, in the resistance which they offer to invading germs. This is probably due, in a measure, to the mechanical protection due to continual winking, aided by the lavage that the lachrymal secretion exercises on the conjunctiva and to the chemical protection, the bactericidal power of the tears themselves. Analysis of the cases collected by Dr. Fortunati leaves one somewhat in doubt as to whether the gland process is a primary manifestation or whether it is secondary to a constitutional condition. In the report offered by the author and in six of those collected by him nothing suggesting similar lesions in other organs was found; on the other hand, one patient showed signs of scrofula, another had suspected bronchitis and hemoptysis, another had had a tubercular mass removed from the nose, another was tubercular, another had enlarged cervical glands and other symptoms of pulmonary tuberculosis, another was very anemic and scrofulous, another had enlarged preauricular, cervical and inguinal glands, and, finally, one had pulmonary tuberculosis, which would rather tend to throw the

responsibility on a pre-existing general condition. As to how the germs are able to penetrate the gland is not very well understood. Dr. Fortunati considers it highly improbable that they are able to make their way from the edge of the eyelid to the fornix, thence to the mouth of the gland against the current of tears continually secreted and at the same time escape the attenuating action of the tears. And, besides, this mechanical and chemical protection may fail under certain circumstances. The act of winking is suspended during sleep; likewise can the flushing action of the tears fail under certain conditions, and the bactericidal power of the tears can become inert, on account of which the power of resistance diminishes or becomes wholly lost. An analogous condition obtains in otitis supervening on a pharyngitis, in which the resistance diminishes and the germs pass through canals against the current. This condition is difficult to verify unless there has existed an inflammatory condition which has extended by continuity to the glandular epithelium. Such a condition shows itself with relative frequency only when the bacillus of Koch is associated with pathogenic bacteria, whereas it is extremely improbable if it occurs in pure infection. Recent investigation on this point would lead one to consider as more probable that the bacilli arrive at the parenchyma of the gland by way of the blood vessels and lymphatics, whether from a focus within or by direct penetration of the mucosa from without. Until quite recently it was thought that a solution of continuity was necessary in order that germs might penetrate the ocular mucosa. It has been established that the bacillus of Koch, as well as certain others, do possess this power of passing through, intact, conjunctiva and nasal mucous membrane. Unfortunately the work in this direction has not been carried as far as the lachrymal gland in searching for the bacilli. That infective bacteria may reach the gland by way of the nasal mucous membrane, on which they have been deposited directly or transported by the tears, is the result of the close relation existing between the lymphatic and vascular plexus of the two organs, the eye and the nose. This likewise finds clinical support in the case of the patient from whom a fungoid growth of a tubercular nature was removed from the nose, and who, six months after, was found to have a tubercular lachrymal gland. Although the continuity of the endo- and exoglobular lymphatic plexus and the relation between the conjunctival and glandular lymphatic circle has not been demonstrated anatomically, it has been shown clinically that infecting germs deposited on the ocular mucosa, whether in a state of quiescence or on the point of developing pathogenic activity, once having penetrated the globe, may determine conditions extending from

a simple hyperemia of the iris to panophthalmitis, while if they reach the gland they may excite an acute or chronic process. This conception of local infection, the point of entrance being the intact conjunctiva or nasal mucosa, explains very well, when tuberculosis is not found to exist in other organs, how the lachrymal gland may become tubercular, and especially well when this condition is unilateral.

Abstracts from Recent Ophthalmic Literature.

BY EDWARD A. SHUMWAY, M.D.

PHILADELPHIA.

The Formation of Serous Cysts on the Anterior Surface of the Iris. — Streiff (*Archiv. f. Augenheilk.*, May, 1904). has reviewed the literature of cases of true serous cysts of the iris and the theories advanced to explain their origin, and reports two cases from Haab's clinic, one of which was traumatic and the other spontaneous in origin. In the traumatic case, microscopic examination of the eye showed the cyst to be situated in the iris stroma; the lining cells of the cyst wall were of the squamous epithelial type, and a direct connection could be traced between them and a process of cells for the corneal epithelium, which was invaginated along the line of the original perforating injury. The theory of Gonella-Stolting that the cysts arise from invaginations of corneal epithelium is, therefore, applicable here, although Streiff admits the Rothmund theory of implantation of epithelial cells as the possible explanation of some cases, notably that of Ahlström reported in 1903. The second case occurred in a child 10 years of age and no history of traumatism could be elicited. An incision was made in the cornea below by Professor Haab and an iodoform rod was introduced into the cyst. This was gradually absorbed, without affecting the size of the cyst. A second introduction of iodoform was performed later, and two subsequent punctures with Laug's knife were made before the cyst disappeared. In the few non-traumatic cases in which the cysts are lined with epithelial cells (Rosenzweig and Lagrange) Streiff accepts the explanation that they are due to proliferation of misplaced elements of the ectoderm, from which normally the lens develops. For the others in which the cells are endothelial in type he assumes the separation of the layer of the iris containing Fuchs' crypts from the posterior layer either by traumatism or by a closure of the lymph spaces which surround the vessels of the middle layer. For this anterior portion he proposes the name of "cryptal layer" (*Kryptenblatt*), and he believes that it may represent the part of the layer of mesoderm from which the pupilla membrane is developed.

Gummatous Tumors of the Sclera. — A. W. Lotin (*Archiv. f. Augenheilk.*, August, 1904), reports a case of scleral gumma in a patient 43 years old. The condition had been present four years, commencing

with severe pain in the eye and head and causing blindness in less than a month. The intense pain had continued during the entire period of four years, when the patient was seen by Lotin and the eye enucleated because of the pain and of the possibility of the presence of a malignant growth. Microscopic examination proved the tumor, which had arisen in the sclera, to be gummatous in character. In this situation gummae are very rare and difficult to diagnose. Ordinarily they form one or several tumors of varying size (from a pea to hazel-nut) which project above the surface of the sclera and occasionally into the interior of the eye. They are round or oval in form, immovably attached to the sclera, and covered with violet-red colored conjunctiva, through the congested vessels of which they sometimes shine with a yellowish gleam. In some cases the growths are painless, but they are usually accompanied with intense pain in the eye and head, probably as the result of implication of the iris and ciliary body. They are usually situated near the cornea, and hence cause opacity of this membrane in their neighborhood. Iritis, retinitis and vitreous opacities are found as complications. They may result in perforation of the sclera, or extensive staphyloma, and may lead to blindness by causing detachment of the retina. The early and energetic use of anti-syphilitic treatment may result in their comparatively rapid disappearance, without permanent trace of their presence.

Purulent Meningitis Following Enucleation of the Eyeball.—En-lin and Kuwahara (*Archiv. f. Augenheilk.*, September, 1904) report a death from purulent meningitis which followed enucleation in a case of panophthalmitis in an atrophic eyeball. At the time of operation the eye was dissected out from the overlying tissues with great difficulty, because of adhesions, and an opening was accidentally made in its coats, which permitted the escape of some of its contents. Meningitic symptoms developed twenty-four hours later, and the patient died fifty-eight hours after operation from a diffuse purulent meningitis caused by streptococcus infection. The eyeball was found to contain the same organisms, but no inflammation existed in the optic nerve. Microscopic examination of the orbital contents showed that the infection had passed backward along the optic nerve and must have occurred at the time of operation as the result of the escape of the virulent, infected material from the eyeball. They believe that enucleation should not be performed in the presence of panophthalmitis; if it is certain that perforation has not occurred, or if the perforation is situated in the region of the conjunctival sac, exenteration may be done. If

there is a perforation into Tenon's cavity conservative treatment should be carried out, although under such circumstances fatal cases have occurred, which, however, would not have been prevented by operation.

Dionin. — Spengler (*Zeitschrift f. Augenheilk.*, October, 1904) reviews the literature on the subject of dionin and comes to the following conclusions :

1. No damage to the uninjured eye has been reported from the use of dionin. Luniewski's observation of a hemorrhage in the macula is an isolated one.

2. The majority of authors advise against its use in recent corneal injuries, in operations (cataract extraction) and perforating injuries of the eyeball.

3. The deeply penetrating, analgesic action of dionin produced by its local application has been confirmed on all sides. It fails in only a minority of cases. All painful inflammations of the anterior part of the eyeball and glaucoma, especially of the non-operable and hemorrhagic forms, are controlled by its influence.

4. It frequently overcomes photophobia and blepharospasm and probably supplements and accelerates the action of atropin.

5. Whether it possesses *in vivo* an absorbing, antiseptic and curative action, i. e., whether it actually influences the disease process itself, as it theoretically should, has not been definitely proven.

Intra-ocular Disinfection with Especial Consideration of Iodoform. — W. Krauss (*Zeitschr. f. Augenheilk.*, Bd. xii, *Ergänzungsheft*) makes a strong argument against the use of iodoform in intraocular infections. He collects and criticizes the cases hitherto published, and reports ten additional ones from the Marburg clinic, and shows that the statistics compare unfavorably with those of Schirmer, who does not use the method. He says that our knowledge of the action of the *intra-ocular* use of iodoform in normal and infected tissue is still incomplete, and what we do know is, theoretically, little calculated to promise any favorable result from its *intra-ocular* use. He believes, moreover, that the method has been shown practically to be not only no advance in the treatment of infected wounds, but, on the contrary, a step backward both as to the result secured in the infected eye and also in the avoidance of sympathetic ophthalmia. His statistics show that nine eyes out of a total of 17 had to be enucleated, because of sympathetic disturbance of the fellow-eye, while Schirmer had no such result in his 62 cases. The conclusions of the experimental part of the paper are as follows :

1. Iodoform may produce decided pathologic changes in the normal eye (anterior and posterior synechiæ, corneal and lenticular opacities, vitreous membranes and retinal detachment) which may remain permanent.

2. In the infected eye, iodoform, either in the form of powder, of rods or of emulsion, is unable to influence favorably, in the slightest degree, a beginning infection, with virulent or but slightly virulent staphylococci of the anterior chamber or vitreous cavity.

3. Chemical investigations in normal and infected eyes show that the iodoform undergoes a very slow change with the production of iodids, and neither the presence of sodium or potassium iodid or the intermediate products can have any antiseptic influence on staphylococci in rabbits' eyes.

He concludes, finally, that the method should be stricken from the list of the ordinary conservative measures in eye infections. It is of no value and may do harm.

In *tubercular* infections he was unable to show experimentally that iodoform had the slightest influence on the clinical course of the condition in the rabbit's eye, or that it had any antiseptic action on the tubercle bacilli.

In infected eyes he believes that Schirmer's treatment with mercurial inunctions offers the best chance of favorable result. Iodids are also of value, but all such means avail nothing if intraocular suppuration appears. Whether the serum treatment will prove of use remains for the future to determine. Repeated puncture of the anterior chamber is of great value, but when panophthalmitis is established we can only hope to shorten its course either by extensive bulbar incisions or by exenteration.

Reports of Societies.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting in Denver, Nov. 19, 1904.

Dr. G. Melville Black, Chairman, presiding.

SUPERFICIAL PUNCTATE KERATITIS AND CONJUNCTIVITIS.

CASE 1.—Dr. Wm. C. Bane. Girl, aged 8, first seen 2½ years ago. Vision R.=6 18, L., 6, 24. The eyes have been more or less inflamed since she was a babe. When 3 years old she had scarlet fever, and at 4 years had chicken-pox. At first examination, in May, 1902, there was considerable photophobia. The ocular and palpebral conjunctivæ were congested. In the center of the cornea was a small phlyctenule (?). Near the center of the lower half of the cornea there was an opaque elevation. This elevation was scraped away. Mild chlorid was prescribed for internal use. Locally a 1 per cent. ointment of the yellow oxid of mercury. On Oct. 15, 1904, she returned, and over the corneal surface are scattered half a dozen small superficial opacities. They are circular and about ½ mm. in diameter. On the upper inner quadrant of the cornea near the margin are three small transparent elevations. The conjunctiva of the ball, radiating from the upper two-thirds of the cornea for about one centimeter, is studded with small transparent elevations ½ mm. in diameter. There is but slight congestion of the ocular conjunctiva, while the palpebral conjunctiva is quite healthy.

DETACHMENT OF THE RETINA.

CASE 2.—Dr. W. C. Bane presented a woman, 36 years of age, who is highly myopic, with retinal detachment, vitreous opacities in the left eye and some opacities in the anterior and posterior surfaces of the lens. The right eye contains floating vitreous opacities.

Discussion.—Dr. Patterson suggested hypodermic injections of mercury, according to Davier, for the retinal detachment.

Dr. Friedmann.—The appearance in Case 1 is like a hyperplasia.

Dr. Stevens.—The appearance of Case 1 suggests lymphangitis.

Dr. Jackson leaves the diagnosis of the first case to Dr. Bane. Case 2 is one of myopia, with detachment of the retina in the left eye and degenerative changes. The opacities in the anterior and posterior layers of the lens of the left eye are brought out by focal illumination.

FOREIGN BODIES IN THE EYE.

Dr. D. H. Coover made the following report of recent cases:

CASE 1.—William D., aged 35 years, a miner, was hit in the right eye June 24, 1904, by a piece of rock while breaking ore. The case came under his observation June 28, 1904. At the outer margin of the cornea and about 2 mm. from the scleral junction there was a wound in the cornea to which the edge of the iris was adherent. The lens was cloudy. There was hypopyon, ciliary injection and tenderness. Vision equaled light perception. Projection fair except in the nasal field. Freedom from pain. Tension minus. Treatment consisted of rest, atropin and hot 1-5000 bichlorid compresses for ten days. The hypopyon disappeared and the eye became quiet. July 6 Dr. Stover of Denver took a skiagraph of the eye and located the foreign body 7 mm. to the temporal side of the vertical plane. The upper end was touching the horizontal plane and extended backward 15 mm. July 12 Dr. Coover removed the lens, and, upon passing a probe into the vitreous in the direction indicated, the point came in contact with the rock. With a pair of forceps he withdrew the rock without loss of vitreous, but had a slight hemorrhage in the anterior chamber. The stone was encapsulated and when drawn out quite a lot of exudate resembling pus came with it. A bead of clear vitreous presented in the wound. The eye recovered with light perception. The foreign body measured 4 x 10 mm.

CASE 2.—A. F., aged 25 years, a miner, received an injury to the left eye on Aug. 23, 1904, by a flying rock entering it. The rock entered at the lower edge of the cornea, passing through the iris and lens. There resulted iritis, with posterior synechiæ, opaque lens and ciliary tenderness. Tension was minus. V.=light perception. At intervals had some pain. Dr. George Stover took a skiagram and located the foreign body 11 mm. back of the center of the cornea, 2 mm. below the horizontal plane and 4 mm. to the nasal side of the vertical plane. Sept. 10, 1904, Dr. Coover removed the lens. It was soft and considerable exudate of a yellowish hue, resembling pus, came out with it. With a small probe he tried to touch the foreign body, but could not find it anywhere in the vitreous chamber. He enucleated the eye, and, upon opening it, found the foreign body had dropped down onto the ciliary body, evidently having escaped from the sac of exudate which was removed with the lens. It measured 3 x 4 mm.

CASE 3.—J. M. D., aged 29 years, a machinist, was hit in the right eye by a piece of steel on May 2, 1904. He presented himself for treatment four days after injury. The eye was very much con-

gested, pus in the anterior chamber, iris inflamed and pupil bound down. The lens was cataractous. The steel passed into the eye 3 mm. to the temporal side of the cornea. A small triangular foreign body partially covered with blood was seen projecting through the iris, being partly in the iris and partly in the lens. Sweet's magnet was applied and the foreign body was observed to move at once, and when the tip of the magnet was placed in contact with the cornea the foreign body came forward through the original wound onto the magnet. The piece of steel measured 2 x 3 mm.

The advantage of Sweet's magnet is that the instrument can be applied directly to the cornea by the oculist instead of the cornea to the magnet, as in the large ones. When the eye is drawn up to a large magnet it is difficult to get perfect control of it, while with Sweet's instrument the patient is in a recumbent position and the magnet is applied to cornea and the operator has perfect control of the eye and instrument.

Discussion.—Dr. Jackson: The difficulty is to touch a foreign body with a probe. He recalled a case in which there was a small bit of steel in the vitreous that the magnet would not touch.

Dr. Stevens: We are indebted to Dr. Coover for the report of such interesting cases.

Dr. BLACK presented three cases and submitted the following report of them:

PARTICLES OF DYNAMITE CAPS IN EYES.

CASE 1.—Mr. J. A. K., aged 38 years, first seen Sept. 29, 1904. Twelve hours before a box of dynamite caps exploded at a distance of about three feet from his head: face and eyes filled with flying particles of copper. Condition: O. D., eye looks normal except for a little spot at temporal margin of cornea and a little hole at temporal margin of iris; pupil dilates freely under atropin: ophthalmoscope shows a slight opacity of the temporal margin of the lens, and a bright, glistening, yellow body of about the size of a pin head is seen in the vitreous, with 15.00 D.+ in the ophthalmoscope. The vitreous is otherwise perfectly clear. O. S., extensive perforating wound of cornea and iris, involving the lower half of cornea, lens apparently not injured. He is sure that the piece of copper that produced this injury was a large piece and that he removed it from between the lids. The incarcerated iris was pulled out and clipped off close to cornea. This eye has gradually become free from inflammation, but gave him considerable pain and annoyance until about three weeks ago. Since then it has been painful at times and is so still. The vision in this eye is reduced to shadows. The vision

of his right eye is 5-15 with correction. The eyes have continuously been under atropin.

KERATITIS PROFUNDA.

CASE 2.—Mr. G., aged 40 years, railroad conductor, thirteen years ago had an attack of inflammation similar to the one he now has in his left eye. This attack lasted about two months and cleared up with a small amount of corneal opacity remaining. Another attack in the same eye occurred about seven years ago. This time he went to Hot Springs and took a course of syphilitic treatment. Recovery in about six weeks' time, with some remaining corneal opacity. If he has had syphilis he is not aware of it and has had no other manifestations of it. He is now having his third attack of inflammation in his left eye, with very slight involvement of his right eye. It began about two weeks ago.

His treatment has been locally atropin and hot applications. Constitutionally, mercurial inunctions, two drams daily. A week ago his cornea was entirely covered with a grayish white opacity, which under magnification resolves itself into fine maculae. A very moderate amount of corneal vascularity is observed. The clearing of the cornea has been rapid, the center of the cornea only now being opaque. Diagnosis is keratitis profunda, as described by Fuchs.

MULTIPLE RUPTURE OF THE CHOROID.

CASE 3.—J. H. B., aged 24 years, in 1898, while firing an old muzzle-loading army musket, the breech blew out, tearing an enormous rent in the right temporal bone and imbedding itself in the frontal lobe of the brain. The operative work at the time required the removal of almost all of the frontal bone, which is now plainly in evidence by the depression and scar. The vision of the right eye was for a long time almost *nil*, but gradually improved. His central vision has not been recovered.

Status Præsens.—Multiple rupture of the choroid must have taken place at the time of the injury, as evidenced by three old scars lying in the inferior temporal quadrant of the retina, one of which partially surrounds the macula, the latter is seen to be a hole. Numerous brownish spots are seen above the disc, but no evidences of rupture in this situation. The nerve head is somewhat atrophic. There is no paralysis of any of the ocular muscles.

Discussion of Case 1.—Dr. Jackson: There is a spot of choroiditis near the disc in the right eye that does not appear as if it could have developed in a few days, as it shows pigment and blood vessels. He would not advise removal of the left eye, as it is quite possible that the left eye in time may be the better eye.

Dr. Coover, some eight years ago, had a case in which both eyes were badly injured. He was in doubt about removal and waited. It turned out that the worse eye proved to have the better vision. A few years ago he cared for a child that had one eye cut with a knife. Sympathetic inflammation set in. The injured eye was enucleated. The fellow-eye went blind. He has always regretted that he enucleated.

Dr. Stevens would advise against enucleation.

Dr. Hilliard would not enucleate or do any operative work for the present.

Dr. Friedman.—As you do not know which is the sympathizing eye, would advise against removal.

Discussion of Case 2.—Dr. Jackson has never seen a case with three relapses.

Dr. Friedman, as the eye is free from pain, suggested specific treatment.

Discussion of Case 3.—Dr. Jackson: Treatment will not benefit the eye. There is no depression in the macula.

WILLIAM C. BANE, Secretary.

MEXICAN OPHTHALMOLOGICAL SOCIETY.

Session of Oct. 6, 1904.

Dr. Uribe Troncoso presiding.

FILAMENTOUS KERATITIS.

Dr. Uribe Troncoso presented a case of filamentous keratitis. He said the case was a rare one and supposed it was the first to be presented in Mexico. The patient came to the hospital with symptoms of intense conjunctivitis, great pain and photophobia. A short time afterward there appeared on the epithelium of the cornea small elevations similar to the eruption of herpes, from which hung a small thread which shortly afterward disappeared, leaving the cornea perfectly clear. After six or seven days this returned, and on each return the inflammatory symptoms were intensified; at the same time on the superior border of the tarsus there were observed two or three small yellowish nodules: on the conjunctiva, and especially in the inferior cul-de-sac, was a caseous, stringy, whitish secretion. When the patient was examined during one of these attacks, it was plain that small globular-like masses developed on the corneal epithelium, and from these came the filaments of about five millimeters in length, which were movable, as the lids moved up and down. They could be raised by the point of a probe, and the

little globule at the end was connected by a fine thread with the cornea. They were short-lived and soon were wiped away.

A microscopical examination was made both of the thread and of the secretion, with no exact results.

In his opinion, the condition was a mucous degeneration of the cornea, with some swelling and expulsion of the degenerated mass. Foreign authors describe the filament as in two parts, an axis and its covering. In this case no accurate distinction could be made. There were various bacteria found in the cultures.

This is not the same thing as those transient filaments found in corneal ulcers.

The prognosis, so far as the condition of the cornea is concerned, is a good one, but there are many relapses, and inflammation may extend over months or years. The best treatment in this case was the chlorhydrate of ammonia, 2 per cent. solution, and collargol, 1-1.000.

Dr. Montano acknowledged the rarity of the disease in Mexico. He thought that acetic acid might help in the treatment.

A. B. HALE.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Clinical Evening, Thursday, Dec. 8, 1904.

John Tweedy, P.R.C.S., President, in the chair.

TUMOR OF THE OPTIC NERVE.

Mr. E. Harries Jones showed a patient on whom the diagnosis of tumor of the optic nerve had been made. He was a man, aged 34, with a good family history and with no history of venereal disease. The vision, when first seen, was normal, but it rapidly failed in the right eye and proptosis developed. On August 28 the orbit was explored and a soft round mass was felt on the nerve. The vision in September had fallen to 6/36 and there was optic neuritis. Iodid was given till October, but was then stopped owing to dyspeptic troubles. The vision improved to 6/12 in December, but the proptosis remains.

PROPTOSIS AND LATERAL NYSTAGMUS.

Mr. G. W. Roll showed a baby, aged 14 months, with proptosis of each eye and lateral nystagmus, but there was no pulsation. Both discs were atrophied and in the right eye there was some choroiditis. The child is mentally deficient, but can sit up alone. There is

abundant mucus discharge from the nares. The testicles are undescended, and the family history is not obtainable.

STERILIZED DRESSINGS.

Mr. Arnold Lawson showed a carton of aseptic sterilized dressings for intraocular operations. He also showed a case of congenital anterior staphyloma.

CENTRAL SENILE CHOROIDITIS.

Mr. A. Hugh Thompson showed two cases of central senile choroiditis in women aged, respectively, 63 and 78. They showed different appearances, but the vision was much impaired in both.

POSTERIOR LENTICONUS.

Mr. Devereux Marshall showed a well-marked case of posterior lenticonus in a woman, aged 23, who accidentally noticed the eye to be defective a few months ago. The condition was well seen with an ophthalmoscope mirror.

CYST OF KRAUSE'S GLAND.

Messrs. G. W. Thompson and Edgar Chatterton showed some sections of a cyst of Krause's gland. The patient was a woman, aged 25, who had a tumor of the upper lid about the size of a pigeon's egg which had followed a blow twelve years previously. The growth had been removed by operation.

ABNORMALITY OF RETINAL VESSELS.

Mr. George Coats showed two sisters, aged 5 and 10 years, both of whom had abnormal arrangements of the retinal vessels. The vision in each case was normal.

Mr. J. W. Tomlinson exhibited Dr. Meisling's color-mixing apparatus.

PROPTOSIS WITH LATERAL DISPLACEMENT.

Mr. Leslie Paton showed a female, aged 38, who was first seen in May last with proptosis of the right eye with lateral displacement. The vision and fundus were normal. Iodid and mercury were given and a small portion was removed for examination, and this was thought to be inflammatory. It continued to grow, however, and an attempt was made to remove the growth without the eye. It speedily recurred locally and was, no doubt, an endothelioma.

OPERATION FOR SYMBLEPHARON.

Mr. Leslie Paton also showed the results of an operation for symblepharon which was caused by orbital cellulitis. The adhesion was extensive, and after dissecting the parts free he grafted the

mucous membrane lining the roofs of the mouths of three frogs. These grafts took well, and the result over a year after the operation was very satisfactory.

INJURY TO THE EYE.

Mr. G. E. Keeling showed a boy, aged 10½, whose eye was wounded through an explosion of a dynamite cartridge in June last. The wound was closed with stitches, and it healed well with good vision. Since then, however, the eye has undergone extensive degenerative changes and has become completely blind.

DETACHMENT OF RETINA.

Mr. Harold Grimsdale showed a woman, aged 42, whose left eye had become blind suddenly some weeks before, and when seen the retina was detached and there was no P. L. The vision of the other eye was normal. Shortly after the good eye developed keratitis punctata, and it was suggested that this might be of sympathetic origin. There is no real evidence of tumor in the blind eye.

VITREOUS HEMORRHAGE.

Mr. A. Stanford Morton showed a man, aged 28, who had had repeated hemorrhages into the vitreous with much impairment of vision. A number of new vessels had since developed in the vitreous.

C. DEVEREUX MARSHALL.

BERLIN OPHTHALMOLOGICAL SOCIETY.

Meeting Dec. 15, 1904.

Prof. von Michel, President, in the chair.

ANATOMICAL STRUCTURE OF OPAQUE NERVE FIBERS.

Prof. von Michel described the anatomical structure in a case of opaque nerve fibers; the medullary sheath extended quite a distance beyond the disc; between this and the optic nerve further back there was an area of axis cylinders without sheaths. Opaque nerve fibers always develop postfetal; the optic nerve also shows signs of degeneration. Von Michel also showed sections of a tumor of the disc which proved to be a fibroma developing out of the hilus of the blood vessels and grown together with the inner coating of the retina. The ophthalmoscopic picture of the tumor (boy, 9 years old) was a small snow-white area occupying a part of the disc and projecting about 2-3 mm.

KROENLEIN'S OPERATION.

Dr. Helbron (assistant of Professor von Michel) spoke on the operation of Kroenlein. After dwelling on Knapp's operation, its

indications, the history of the Kroenlein operation and its predecessors, he described the common method, the complications, etc. There are 11½ cases on record, counting 11 performed in recent years in the clinic of Professor von Michel. In most cases paresis of some muscle remains; also ptosis which, in half the cases, disappears later on. In one case exhibited there was a paralysis of accommodation due to destruction of the ganglion ciliare. One remarkable case of sarcoma of the optic nerve recently operated on, the optic nerve was able to be preserved, vision improved; no relapse (as yet). In another case evisceration of the orbit had to be performed after the Kroenlein operation. In all cases the bone healed well, the scars are not all disfiguring. In one strange case of exophthalmos the operation failed to reveal any source in the orbit; the histologic examination showed "chronic interstitial inflammation of the cells." Finally, Helbron gave a complete list of indications and contraindications of the operation.

DR. E. H. OPPENHEIMER, Berlin.

Notes and News.

STELLWAG VON CARRION, formerly professor of ophthalmology of the University of Vienna, is dead, at the age of 82 years.

DRS. BROWN PUSEY and W. E. GAMBLE have been appointed attending ophthalmologists to Cook County Hospital, Chicago.

IN a symposium on gout, held January 17 before the Fort Wayne Medical Society, Dr. K. K. Wheelock of Fort Wayne read a paper on the "Ocular Manifestations of Gout."

THE following are the officers of the ophthalmic section of the British Medical Association: President, G. A. Berry: vice-presidents, W. M. Beaumont and E. C. Green: honorary secretaries, W. W. Henry and J. H. Parsons.

THE following officers were elected at the annual meeting of the Chicago Ophthalmological Society: President, J. Elliott Colburn: vice-president, H. V. Würdemann: secretary, Thomas Faith: counselor, T. A. Woodruff.

A. QUARRY SILCOCK of London, England, died December 19 of appendicitis, after an illness of only a few days. Mr. Silcock was 49 years of age. He was one of the attending ophthalmologists at Moorfields, and at the same time surgeon to St. Mary's Hospital.

TRUXCEK'S SERUM, which has been used successfully in a few cases of retinal detachment, has the following composition:

Sodium sulphate	0.44
Sodium chlorid	4.92
Sodium phosphate	0.15
Sodium carbonate	0.21
Potassium sulphate	0.40
Distilled water to.....	100.00

DR. EDWARD JACKSON, in the chapter on ophthalmology which he writes in *Progressive Medicine* (June, 1904, volume), calls attention to MacCallan's five cases of glaucoma in which the use of adrenalin was promptly followed by a very marked and rapid in-

crease of the intraocular tension. "Hannan and Jessop had also seen cases indicating that the use of the drug was attended with danger of increased tension. This is of importance, because adrenalin has been strongly recommended for the treatment of glaucoma by Darier and others."

JOHN REISSBERG WOLFE, M.D., consulting oculist to the Royal Infirmary, Glasgow, is dead at the age of 80 years. He was born in Breslau, Germany, and graduated at Glasgow University in 1856. He founded the Glasgow Ophthalmic Institute, and was the first professor of ophthalmology at St. Mungo's Medical School, Glasgow.

CURE OF TRACHOMA WITH RADIUM.—Herman Cohn, the well-known ophthalmologist of Breslau, writes to the *Berliner klin. Wochenschrift* of January 2 to report the rapid disappearance of the granulations in 3 cases of trachoma treated by exposure to radium. He used 1 mg. of radium bromid in a glass tube, 3 cm. long by 2 mm. in diameter, with daily exposures of ten to fifteen minutes. The granulations had been treated before with various measures by himself and others, without effect, while they were rapidly and painlessly banished by the radium, without a perceptible trace of any injurious consequences for the lid or the sight. These results confirm those obtained by R. Pardo of Turin in 2 cases of this hitherto intractable affection. His report was mentioned in the *Journal* of Sept. 17, 1904, page 850.—*Journal of the American Medical Association*.

THE BACTERIOLOGY OF PANOPHTHALMITIS.—By Richard H. Johnston (*Med. News*, New York), Aug. 20, 1904.—The author states that: From the observations of several investigations, it seems an established fact that Fraenkel's pneumococcus is the most frequent cause of panophthalmitis. While in some cases a mixed infection of pneumococcus and staphylococcus or pneumococcus and streptococcus has been found, the pneumococcus is probably the essential etiologic factor. Gaspanini, Uhthoff, Hansell, Bocci and Horatio are cited as supporting this theory. The author reports two cases which occurred in the Presbyterian Eye, Ear and Throat Hospital of Baltimore. One in the person of a negro man following a cataract extraction six weeks after the patient had recovered from pneumonia. The wound was infected, resulting in panophthalmitis. Smears from the pus showed diplococci. Three c.c.m. of a bouillon culture were injected into a guinea-pig. The animal died twenty-two hours later and smears

from the heart's blood showed encapsulated pneumococci. Cultures from the other eye and from the blood were negative as to the presence of the pneumococcus. Later cultures always showed pure pneumococci. In this case the pneumococcus was certainly the direct local cause of the infection. The second case resulted from a knife wound of the eye. Both pneumococci and staphylococci were found. Inoculation experiments on the guinea-pig gave pneumococci in the blood. In this second case, the essential cause, the author believes to be due to the malignant pneumococcus. The author concludes: Now that the cause of the disease has been established, it behooves us to use our best endeavors to prevent such infection. According to Randolph, the normal conjunctiva always contains organisms, the commonest species being the *staphylococcus epidermidis albus* of Welch—a coccus resembling the *staphylococcus pyogenes albus*. Lawson found the normal conjunctiva to be sterile in 20 per cent. of cases and pyogenic cocci to be rare, and when present, non-virulent. Other observers have stated that the conjunctiva is usually sterile. It is probable that organisms in the normal conjunctiva are non-virulent, and in order to prevent infection following cataract operation, it would seem advisable to ascertain whether or not the pneumococcus is present. If so, the operation could be deferred for a time and measures taken to get rid of so malignant an organism. The saving of one eye from infection would be worth the trouble entailed in taking of cultures and of animal inoculations. Horatio's observations have shown that a mucocoele increases greatly the danger of pneumococcus infection. It would be a simple matter to investigate this disease for the same organism. It is our duty as oculists to take every precaution to prevent infections of all kinds and especially the pneumococcus infection, which has undoubtedly caused the loss of not a few eyes. I firmly believe that by bacteriologic examination we can at least decrease the number of cases of panophthalmitis following cataract extraction.—Abstracted in *Post-Graduate*.

THE "OPTICAL SOCIETY" OF THE STATE OF NEW YORK.—We gladly publish the following open letter:
To the Medical Profession of the State of New York:

During the legislative session of 1904, a society of opticians, known as the Optical Society of the State of New York, petitioned the legislature to enact a law creating a State board of examiners in optometry. Before this board would appear all persons who desired to practice optometry, which practice was defined in the act

to be enacted as "the employment of any means other than the use of drugs for the measurement of the powers of vision and the adaptation of lenses for the aid thereof." The Medical Society of the State of New York opposed this bill, and with the aid of other organizations, especially the county medical societies and the Optical League (an organization of opticians doing a legitimate business), secured its defeat.

Since the last election, this optical society has been forwarding to physicians in all parts of the State, as well as to the members-elect of the next legislature, a document giving reasons why a law of this kind should be enacted, and asking their indorsement.

At the time of the hearing on the optometry bill before the legislative committees of last year, the opticians presented a long list of names of physicians who had indorsed their efforts. The undersigned communicated with every name on the list, and learned that where reputable physicians had indorsed the measure it was through a misapprehension of the real purpose of the bill; and when its true character was pointed out to them they not only withdrew their indorsements, but in many cases wrote vigorous letters in opposition to it. Many of the names were fictitious, the communications addressed to the addresses given being returned as not found. A large number were the names of irregular practitioners, such as osteopaths, spiritualists, etc. There is no doubt that the object of the opticians in presenting the present arguments is to obtain the indorsement of physicians, so that at the next legislative session these signatures can be used to offset the opposition which will be presented by the regularly organized medical bodies of the State. I, therefore, address the profession of the State, urging its members not only to refuse to indorse this and similar measures, but to make an effort to present to their representatives, both in the assembly and the senate, the true merits of the case, and urge their opposition to it.

The arguments presented by the opticians are very misleading. Their claim, of course, is that they desire to protect the community from incompetent people, but the fact is (as every well-informed physician must know) that they are all incompetent. They seek to create a separate profession. This they deny, but in their remarks before the legislative committees they continually used the expression "our profession." They seek the legal right not only to apply lenses for the correction of defective vision which may or may not be due to errors of refraction, but they also seek to treat headaches, dizziness, and the various reflex phenomena which may be due to affections of the eye itself or to affections of organs re-

mote from the eye. They pose as being competent to make a diagnosis. To prepare physicians to do this work the law requires that a four years' course in a medical college shall be taken, after which a medical examination conducted by the State must be passed. Physicians themselves find that after this preparation it is often difficult to be sure of their ground; and, if this is so, there seems to be no good reason why opticians should be allowed to undertake the same work with any less preparation.

It seems unnecessary at this time to go into an extended argument in opposition to this bill. The effort to secure its enactment is not an honest one. Opticians know that they are violating the law in following the occupation which they are now engaged in, and they say that if their bill is enacted it will not give them any more powers than they now possess, while the fact is that the enactment of the bill will give them the legal right to do what they are now doing in violation of the law. They really desire to use the legislature as a tool to put them beyond the grasp of this law; and if this is once clearly brought to the attention of our senators and assemblymen, there is no doubt what the outcome will be. We have met this and similar efforts more than once in the past, and there is no doubt that we shall meet many more in years to come; but from our experience we feel justified in making the assertion that if the medical profession presents a united opposition to the measures of this kind, they will never be enacted into law in the State of New York. Frank Van Fleet, M.D., chairman of the Committee on Legislation of the Medical Society of New York. —*New York and Philadelphia Medical Journal*.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, FEBRUARY, 1905. VOL. XIV. NO. 2. NEW SERIES

Original Articles.

A CASE OF BILATERAL HYSTERICAL AMAUROSIS.*

ADOLPH O. PFINGST, M.D.

LOUISVILLE, KY.

The following case, on account of the infrequency of the affection, may be of interest to the members of the society:

A minister's wife, aged 42, of a neurotic temperament, gave the history of having had frequent attacks of pain along the spine for several weeks. After each attack her vision for close objects was dim, and at times it was impossible for her to read for several days following an attack. The patient was led into my office, apparently blind, on February 20. On the preceding day she had had a more severe attack of pain in her back than usual. Her vision at the time was, as far as she knew, as good as ever, but upon retiring at night her entire surroundings appeared green to her. Upon arising on the following morning she could not see, or, as she expressed it, "everything appeared black." It seemed to her as though a large, round, black disc covered each eye and that a faint light could be seen around the edges of the dark fields. The discs increased rapidly in size, and by noon the patient was in almost complete darkness. She still complained of some pain in the occiput and back, of a burning sensation in the vertex and an occasional darting pain in the eyes. Her family physician saw her at 11 o'clock and had me see her in the afternoon. At the time she was able to distinguish darkness from light, although she could not determine the direction from which the light was thrown into the eyes. Both pupils were narrow, but contracted more when exposed to concentrated light. Movements outward were limited in both eyes, the eyeball being rotated outward but little beyond the middle line with great effort. The interior of both eyes, examined under a mydriatic, was normal. The

* Reported before the Kentucky State Medical Association, Lexington, Ky., May, 1904.

patient, at this time, was extremely sensitive to the slightest pressure over the entire length of the spine and would cry out with pain when the spinous processes were touched. Examined in the dark room, the patient was unable to tell darkness from light when the hand was passed between her and the light of an Argand burner. This condition remained unchanged for about three weeks. Dr. J. M. Ray saw the patient about a week after the beginning of the blindness and corroborated the finding of normal fundi and humors. The patient was placed on a disagreeable mixture as a placebo. leeches were applied to the temples and counter-irritation employed on the temples and forehead with no avail. On March 12, twenty-one days after the beginning of the trouble, while walking about in her room, the patient stumbled and fell to the floor. The fall was followed immediately by another attack of pain in the back and head. A few hours later the patient again described the large, black discs as she had seen them at the onset of the blindness. Examined at that time, she had no perception of light centrally and a questionable perception at the periphery. The interior of the eyes was unchanged. Upon arising on the following day the patient could see large objects, and by the afternoon vision in both eyes was 20/200. From that time on there was a rapid improvement, and when I saw her on March 18 her vision had returned to normal—20/20. The fundi were still unchanged.

A month later I was called again to see the patient and found her in the same condition as upon my first visit. The areas of hyperesthesia, however, were more numerous and extensive. The skin over the entire abdomen was so sensitive that mere contact with the hand would cause her to cry out with pain. The spine was again extremely sensitive, especially over the spinous processes. Near the posterior superior spine of the ilium on the left side a hyperesthetic, congested area about three inches in diameter could be mapped out. Recovery from this attack was sudden, as in the previous one. Various means, entirely suggestive, were employed in the hope of cutting short the attack, but blindness continued for ten days and then, as in the other attack, the vision returned to normal in several days. Physical examination of this patient and the examination of the urine made at different times revealed nothing noteworthy. As the family removed from the city soon after the second attack, I have been unable to keep the case under observation.

The diagnosis in this case can hardly be doubted. Its hysterical nature is indicated by the suddenness of the onset of the blindness, the retention of the pupillary reaction to light, the absence of patholo-

gic lesions and its rapid and complete recovery with restoration of perfect function. The diagnosis is substantiated by the hysterical backache, the hyperesthesia over the spine and abdomen and by the paresis of the ciliary muscle and the contracture of the internal recti.

The special features of the case are the advanced age of the patient, 42 years, the appearance of the amaurosis after severe pains in the back and the recovery after a similar attack of pain. The original hysterical phenomena could not be traced to any special exciting cause.

Amaurosis, or the complete loss of every form of perception, is one of the less frequent of the sensory disturbances of hysteria. It is classed with the anesthetics. As a rule but one eye is affected, bilateral hysterical amaurosis being very uncommon. Kerneis,¹ in 1902, gathered all of the cases of the kind on record. He was able to find but 31 cases in the entire ophthalmological literature. I have been able to find the report of only one additional case since then, C. Roux² having observed the condition in a child of 9 years. In the compilation of Kerneis the oldest patient in whom binocular blindness was observed was 39 years and the youngest 9 years old, most of the cases occurring between the ages of 15 and 30. Of the 26 cases in which the sex of the patients was indicated 21 were in females and only 6 in males. In the majority of the 31 cases other symptoms suggestive of a hysterical habit were present before the eyes became involved, but in 6 cases the blindness came on without any previous trouble and without premonitory symptoms. A marked case of this kind³ occurred in a miner, who, with absolutely no family or personal history of neuroses, suddenly became totally blind while at work in the mine. Everything pointed to the hysterical nature of this case, complete and permanent recovery taking place after several days. The blindness in most of the reported cases came on in both eyes simultaneously, however: in some instances several weeks or months elapsed before the second eye became involved. In a number of the cases a stage of amblyopia was passed through before the perceptive power of the eyes was entirely lost. The duration of the blindness was variable, the vision returning, in some few instances, in several minutes, while in some the blindness lasted for several weeks or months. In the case reported by Oppenheim⁴ the patient was unable to see for one year and a half. In most of the cases the attacks of blindness lasted from 4 to 12 days.

1. J. Kerneis, *Etude la Cecite Hysterique*, 1902.

2. C. Roux, *Archiv. d'Ophthalm.*, Dec., 1903.

3. E. Glasscott, *British Med. Journal*, 1887.

4. Oppenheimer, *Lehrbuch der Nervenkrankheiten*, 1894.

The majority of patients had one attack, but in quite a number of them one or more recurrences were observed. The blindness in nearly every instance terminated just as it began, i. e., abruptly if the beginning had been abrupt and slowly if the development had been less abrupt. Just as in the beginning the termination of the blindness was usually preceded or followed by a nervous paroxysm. In all of the cases reported by Kerneis loss of perception of light was complete.

The accompanying general and ocular symptoms varied in each case. Characteristic of all of them, however, was the retention of the pupillary reaction to light and the absence of pathologic lesions in the eyes. The pupils in some cases were normal, in others very narrow, and in a few they were dilated. In some instances contracture of the levator palpebrarum was noticed, the eyes remaining open even during sleep. In others the orbicularis muscles were involved, causing a partial closure of the lids, resembling ptosis. Contracture of the internal and superior recti muscles was also seen in several of the cases. Nystagmus was also noted. Paralysis of the ocular muscles was not observed; however, in a number of cases disturbances of the sensory functions were observed. In these cases involvement of the special senses was a prominent feature, several of the patients being unable to see, hear or smell at the same time. Hyperesthesia was also present in a number of the cases. A noteworthy feature observed in a number of the cases was the ability of the patients, although totally blind, to move about without running into furniture or other objects. Several of the patients were observed to run rapidly the length of a long hall and into an adjoining room without the least hesitation.

The diagnosis of bilateral hysterical amaurosis must be based upon the history of one or more hysterical crises, followed by a sudden onset of the blindness, the absence of pathologic lesions and upon the sudden return of vision. There are few conditions with which it might be confounded.

A high degree of toxemia might possibly be mistaken for a hysterical condition if not thoroughly examined, but in such cases the condition of the urine and the accompanying symptoms of uremia, as vomiting, headache, dyspnea and mental heaviness will clear up the diagnosis. In amaurosis due to tobacco and alcoholic poisoning the vision diminishes gradually and there are nearly always fundus changes to account for the defective vision. The absence of hysterical phenomena in these cases is also significant.

Cases of temporary blindness which have been reported following some of the infectious diseases are differentiated from those due

to hysteria by the history of the febrile affection, the absence of hysterical phenomena and usually by the dilated pupil.

Those cases which, from time to time, have been reported as traumatic blindness following nasal operations and the extraction of teeth are now considered by Panas and others as purely hysterical in their nature.

Cases of hysterical amaurosis, especially those following injuries, might naturally lead to a suspicion of simulated blindness. It is said that a malingerer will invariably betray himself by winking when the eye is approached rapidly with the finger and that this is not true of the hysterical blind.

The treatment employed in the reported cases of hysterical blindness differed in almost every instance, although electricity, leeching or counter-irritation was employed in most of them. No special benefit was derived from any one form of treatment.

Some of the cases presented features of more than ordinary interest as regards the means employed to restore the vision. Abadie and St. Ange⁵ caused the amaurosis to disappear by pressing gold coins against the temple of the patients, and in a case reported by Cruchet⁶ the patient recovered her vision eight different times after attacks of total blindness by the sight of red objects. During her first attack it was noticed that her vision returned suddenly at the sight of a pair of bright red slippers and that other red objects had the same effect in some of the subsequent attacks. In one case recovery was brought about by preparing the patient and instruments for an operation and administering an anesthetic.⁷

St. Ange has said regarding the treatment of hysterical amaurosis that "these cases may resist the most severe treatment only to respond to the simplest remedies, and that time, assisted by some lucky accident, will do more for these patients than anything else."

All of the treatment is more or less suggestive and depends largely upon the disposition of the patient and the degree of intelligence. In some cases a rapid cure can be promised, while in others, especially in the more intelligent, restoration of the function may be brought about more gradually. The personality of the physician has also some influence upon the outcome of the disease, firmness and kindness constituting the requisites of his personality. The electric current has probably been employed more frequently than any other form of suggestive treatment. The opening and closing of the galvanic current in functional disturbance of vision

5. L. St. Ange, *Revue medicale de Touloune*, 1884.

6. R. Cruchet, *Archiv. de Neurologie*, 1901.

7. W. O. Moore, *Medical News*, 1888.

is very impressive and suggests to the patient the return of the lost function. The blisters and counter-irritants of other forms, leeching and bleeding, have all been employed more or less successfully. In the interparoxysmal stage the predisposing condition must be counteracted by hygienic, dietetic, moral and medicinal measures, with the view of increasing the power of resistance of the body and exerting an invigorating influence upon the nervous system.

427 W. Chestnut Street.

REPORT OF A CASE OF PAPILLOMA OF THE LACHRYMAL CARUNCLE.*

C. A. VEASEY, A.M., M.D.

Ophthalmic Surgeon, Methodist Episcopal Hospital; Assistant Ophthalmic Surgeon and Chief of Clinic, Jefferson Medical College Hospital, etc.

PHILADELPHIA.

Tumors of the lachrymal caruncle are of exceedingly rare occurrence. The writer has had the opportunity to observe a case of primary sarcoma¹ and a case of adenoma² having their origin in this portion of the conjunctiva, and these have been previously recorded. Papilloma has also been observed a few times, a case having been reported before this section by Posey and Shumway³ at the meeting of Nov. 20, 1900. In their paper the literature is thoroughly reviewed, six recorded cases having been found. To these it is the desire of the writer to add another.

J. H., a male, farmer, aged 21 years, presented himself at the Jefferson Medical College Hospital in the service of Dr. H. F. Hansell, April 29, 1904, with the following history:

Two years before he had been struck on the left eye by a piece of wood, but does not recall what portion of the eye was injured. Shortly afterward a small growth was observed in the corner of the eye next the nose, and this had gradually increased in size.

At the examination there was found a large cauliflower-like growth, 7 mm. in diameter, attached by a pedicle to the lachrymal caruncle, and on the plica-semilunaris about 5 mm. distant from the caruncle and attached to the pedicle of the caruncular growth by a strip of very hard cartilaginous-like substance were two similar growths, 4 mm. each in diameter. They were of a pinkish color, seemed to possess but little sensation when touched, and the larger

* Read in the Section of Ophthalmology of the College of Physicians of Philadelphia, Jan. 17, 1905.

1. Archives of Ophthalmology, vol. xxvi, No. 2, 1897.

2. Annals of Ophthalmology, July, 1902.

3. Univ. of Penna. Medical Bulletin, Nov., 1901.

protruded from between the eyelids when the latter were closed. Two large veins passing upward and downward on the plac from the caruncle were also observed. Beyond the slight irritation to the conjunctiva occasioned by their presence there were no other symptoms. No family history of tumors could be elicited.

The growths were excised under cocain anesthesia, the bases cauterized, and the report from the laboratory of the Jefferson Medical College is as follows:

The margins of the section consist of many irregular villous projections composed of layers of stratified squamous epithelial cells. These are arranged around a central core of coarse, rather densely woven fibrous tissue containing within its meshes a few thickened blood vessels, the lumina of which contain fairly well-preserved erythrocytes. At another place within this epithelial area is a stellate collection of red blood corpuscles contained within a finely granular matrix of fibrin. The corpuscles are quite well preserved and are evidently the remains of a hemorrhage. The central portion of the section is composed of a limiting layer of stratified squamous epithelium, surrounded by a broad area of coarse and fine, closely woven, fibrous tissue. Within its meshes, and approximating the epithelium, are several glands, probably sebaceous. At other points throughout this region are many distorted blood vessels containing red and white blood corpuscles.

Diagnosis, papilloma.

PENETRATING SHOT INJURIES OF THE EYEBALL.

L. D. BROSE, M.D., PH.D.

Oculist and Aurist, St. Mary's Hospital,
EVANSVILLE, IND.

My paper will deal solely with penetrating injuries of the eyeball inflicted by small leaden pellets commonly designated as shot. Such injuries are always serious, and in the beginning, because of the difficulty in locating the missile and estimating the damage wrought, one should be guarded in expressing an opinion as to the probable outcome. As illustrating how these injuries may occur and with a bearing on the prognosis, I will relate the following cases:

Case 1.—C. B., aged 25 years, and a druggist, residing at Fredonia, Ky., came to see me Dec. 14, 1903, with the following history: In company with a friend, he went bird shooting Oct. 28, 1893, and was accidentally shot in the face and eyes by his companion. The external wounds had healed without trouble, leaving the face considerably scarred. The eyelids were swollen, the eyes irritable,

with some circumcorneal redness. The right eye had been penetrated with a single shot below and at about midbulbus, while the left eye showed a similar perforation near its equator and about midway between the internal rectus and inferior rectus muscles. O. D. vision 15 c.c. and words in Sn. 2.25. O. S. vision 15 xi and Sn. 0.50 eight to fourteen inches. Ophthalmoscopic examination: Right lens, partial traumatic cataract; vitreous, numerous floating opacities so that the optic disc and fundus are but indistinctly seen; left lens, traces of traumatic cataract; vitreous, floating opacities, while a white fissure is seen in the coats of the eye extending from near the point of shot entrance backward, but not quite reaching the optic disc and ending Y-like. The iris in both eyes is uninjured. An opinion was given that the shot in both instances had gone entirely through both eyes and become encysted in the extraocular orbital tissue. He was advised not to use his eyes any more than absolutely necessary and given to take a small dose of iodid of potash three times daily. For local use a lotion of lead water was prescribed. June 14, 1896, I again examined this patient. In the right eye there still remains incomplete traumatic cataract and vitreous opacity, while vision in the eye has sunk to the counting of fingers at seven feet. The left eye has regained vision to 15/xx and with the help of +0.50 cylinder ax. 90 15/xv. The vitreous is clear and there remains but a trace of peripheral lens opacity. Dec. 15, 1897, condition of both eyes much the same as at previous visit. Vision in the left eye increased to 15'xv. The eye has fully regained its sight and usefulness.

Case 2.—F. T., aged 30 years and a resident of Princeton, Ind., was sent to me by Dr. A. R. Burton Nov. 8, 1899. On the afternoon of the previous day, he relates, he had cleaned his shotgun and then taken it out of door and fired a load from the right shoulder aimlessly in the direction of a railroad track some twenty yards away. Immediately he felt a very sharp pain in the right eye and soon discovered he could not see with it. Later investigation established that some of the shot had struck the lower flange of the railroad iron and been deflected against the upper flange, from whence one of the pellets returned, boomerang fashion, and struck him in the right eye. Upon examination, intense pericorneal injection was seen, and a slit-like perforating wound of the right cornea a little above its center and to the nasal side. The iris just above the pupillary border and under the corneal injury was lacerated, while the lens was cataractous and much swollen. It was impossible to tell from an ophthalmoscopic examination whether the foreign body was still in the eye or not. He was sent to St. Mary's Hospital, confined

to bed and the eye treated with cooling compresses wetted with a solution of boric acid. He remained in the institution until November 19, suffering no pain, when, at his request, he was granted permission to return home, with the injunction, however, should the eye become painful, to return at once. By the following day most violent pain set up in the eye, and he returned to the hospital this same day. Enucleation was performed November 21, and a highly flattened bird shot recovered from the vitreous chamber. The vitreous tissue was fluid, with beginning puriform decomposition. The after-healing was without incident, and the patient was soon able to resume his work.

Case 3.—George P., aged 6 years and living at Herald, Illinois, was sent to me by Dr. William Brimblecombe of Carini Nov. 7, 1900, because of a shot injury received two weeks previous while the child was in a field where a man was shooting quail. Examination disclosed a healed shot wound of the right upper lid and an open wound of the eyeball near the equator and a little above the internal rectus muscle. The shot evidently had gone through the upper lid, struck the bony orbital wall and been deflected downward, piercing the eyeball. The eye was softer than normal and the circumcorneal blood vessels injected. No light reflex could be obtained. By oblique focal illumination a foreign body was made out partly in the anterior chamber and entangled in the meshes of the iris a little below the pupil. The patient was sent to St. Mary's Hospital, where the anterior chamber was opened with a keratome and the shot extracted with the iris forcep. Uninterrupted healing followed. March 23, 1903, I again saw the patient. There was divergence of the injured eye with vision the counting of fingers at two feet. The lens had been wholly absorbed, and, with the ophthalmoscope, a whitish rupture of the eye coats could be traced, running backward, downward and outward from the point of shot entrance and partially encircling the lower border of the optic disc. It is scarcely possible to minutely generalize a line of treatment for these injuries applicable to a large group of cases. One of the first questions to be decided, however, is, Does the shot still remain within the eye or has it penetrated at one point and gone out again at another into the surrounding orbital tissue? As a rule, the ophthalmoscope is of little aid in solving that point because traumatic cataract or intraocular hemorrhage interfere with obtaining a distinct outline of the fundus. Probing of the wound is likewise of little value in most cases. Palpation simply discloses that the eye is softer than normal, but gives no information as to the location of the foreign body. The sideroscope, while possessing diagnostic value in cases of steel

and iron particles within the eye, can not be used in locating a leaden missile. By an *x*-ray skiagraph it is possible to determine the presence of a solid metallic body within the orbital cavity and, indeed, successfully locate it within the eye, but in my hands such attempted localization, notwithstanding the accurate directions laid down by Swanzy,¹ has met with failure oftener than with success. There remains, then, the general symptoms to aid us, such as the history of the case, the position and direction of the wound, the presence or absence of reactive inflammation, the loss of sight and limitation of the visual field. The prognosis, so far as it relates to the preservation of the eyeball in those cases where the shot has gone entirely through the eye and found lodgement in the circumbulbar tissue, is in most cases good. The ultimate preservation of useful sight in such instances will often be greater than at first thought possible. This should influence our treatment, and, in my opinion, early enucleation should not be thought of without we have positive evidence that the particle of lead lies within the vitreous chamber and has already set up infection of its contents. Instead absolute rest in the reclining posture, with such anti-inflammatory local applications as are generally recognized as useful, should be employed. It is permissible to attempt extraction of a movable shot within the vitreous with forceps, hook or other instruments in the absence of marked infection symptoms and where such shot is capable of being seen or its location reasonably accurately determined, and I must disagree with Gruening² that such attempted extraction is unjustifiable. Lead being non-magnetizable, a resort to extraction by the magnet is not to be thought of.

REPORT OF A CASE OF LEUCOSARCOMA OF THE CHOROID WITH SECONDARY INVOLVEMENT OF THE CILIARY BODY.*

C. A. VEASEY, A.M., M.D.

Ophthalmic Surgeon, *Methodist Episcopal Hospital*; Assistant Ophthalmic Surgeon and Chief of Clinic, *Jefferson Medical College Hospital*, Etc.

PHILADELPHIA.

Leucosarcoma of the choroid is of sufficiently infrequent occurrence to merit reports of isolated cases; and especially is this true if there be found any unusual features in the microscopic examination. It is for these reasons that the writer offers the notes of the following case:

1. Swanzy: *Diseases of the Eye*, p. 390.

2. Norris and Oliver: *System of Dis. of the Eye*, vol. III, p. 714.

*Read in the Section on Ophthalmology of the College of Physicians of Philadelphia, Jan. 17, 1905.

Mrs. J. E. S., aged 59 years, living in the central portion of Pennsylvania, was referred to me on Aug. 6, 1902, for an examination of her eyes, the vision of the left having been lost for about four months.

History.—She had used glasses for many years, but had never observed any trouble other than presbyopic symptoms until the early part of 1901, about twenty months before I saw her. At this time there was seen occasionally “flashes of light,” especially when reading. Four months later “black spots, very much like flies,” were discovered constantly present in the left eye. About this time she consulted a general physician, who examined her eyes with an ophthalmoscope, and advising that she had kidney disease, placed her under treatment. Her general condition improved, but her eye remained about the same. Subsequently she was given five weeks’ treatment in the Roaring Springs Sanitarium without benefit.

On April 30, 1902, having been blind in the left eye for a month, she was referred to an ophthalmologist for the first time. It was now noted that there was a “peculiar condition” inside the eye, and that it would have to be carefully watched for further developments. The possibility of a growth was considered and discussed in consultation with another physician.

Three weeks later another examination was made and the condition had grown worse. Early in June, 1902, about nine weeks before she was referred to me and about sixteen months from the beginning of the ocular symptoms, the eye became exceedingly painful and continued so until it was removed.

Examination.—An examination of the right eye showed it to be normal in all respects. In the left the conjunctiva was injected, the cornea was slightly hazy and partially anesthetic, the anterior chamber was shallow, the pupil small and fixed with exudate to the lens capsule, the iris bulged forward, the lens was cataractous and tension equaled $+2$. Vision was totally abolished. The patient had suffered from severe pain for so many weeks that she had lost in weight and had become very nervous and irritable.

The urine and blood examinations were practically normal.

Inquiry elicited the fact that the patient’s father, aged 86 years, had excellent vision and that the mother, who died in her eightieth year, had never had any trouble with her eyes, nor could any history of tumors or ocular disease be discovered in any of the family branches. The patient herself had always been more or less subject to malaria, but, excepting this, her health had been good until the eye trouble began.

Treatment.—The eye was enucleated, the optic nerve being divided as far back as possible. There was very slight hemorrhage and healing was prompt. No indication of recurrence has been noted, though two and one-half years have elapsed.

Pathologic Examination.—The eyeball was hardened in a formalin solution, bisected, and one-half given to Dr. E. A. Shumway for examination, who has kindly furnished the following report:

Macroscopic Appearance.—The eyeball presents a white tumor mass extending from a position just in front of the ciliary attachment of the iris to the equator of the globe. It extends inward, detaching the iris and dislocating the lens, and reaches an elevation of 14 mm. above the sclera, transversely, approaching within 4 mm. of the ora serrata of the opposite side. Its greatest diameter antero-posteriorly is 16 mm. The lens is partially absorbed and the retina is completely detached.

Microscopically the tumor is seen to be a sarcoma, which is almost entirely free from pigment. Under low power, only the anterior part shows any pigmentation. Under high power, a small amount is found to be present in two forms: (a) in the ordinary pigmented stellate cells, with long slender processes, corresponding to the chromatophores of the choroidal stroma, and (b) as irregular pigment granules scattered between the tumor cells. The main mass of the growth is composed of spindle cells. On the surface, however, and especially in the anterior part, the cells are of a different type. Here they consist of larger, flat forms, which are in places polygonal, in others more cylindrical in outline, and, instead of forming closely packed masses, they are arranged in long parallel lines, giving much the appearance of tubules. Cross sections of such tubules show the cells surrounding open spaces, which are evidently newly formed blood vessels or lymph channels, which have no lining endothelium. In other words, this portion of the growth partakes of the character of an endothelioma. The lamina vitrea of the choroid and the choriocapillaris are continuous over the growth, except at the apex, where the former is ruptured and the latter disappears. Similar cases have been described by Schieck, who considers that the superficial portions, which show an angiosarcomatous or endotheliomatous structure, arise primarily from the choriocapillaris (*Arch. f. Ophth.*, vol. lxx, 1898). The ciliary body is entirely replaced by the tumor, which has apparently arisen in the choroid and invaded the ciliary body secondarily. The tumor projects into the anterior chamber, but has not invaded the iris-stroma. The iris shows a moderate round-cell infiltration, the angle of the anterior chamber is obliterated, and the cells have

invaded the meshes of the ligamentum pectinatum, surround the canal of Schlemm and are passing backward along one of the episcleral vessels. The lining cells of the ciliary body on the opposite side show an enormous swelling of their cell bodies from edema, and this change is found also in the anterior layer of pigmented cells on the posterior surface of the iris. The retina is detached and shows the usual degenerative changes which result from this condition.

Diagnosis.—Leucosarcoma of the choroid, with secondary invasion of the ciliary body; the main body of the tumor is composed of spindle cells, but the superficial portions partake of the character of an endothelioma.

OPHTHALMIA NODOSA.

H. V. WÜRDEMAN, M.D.

MILWAUKEE.

Swan Burnett¹ limits the term ophthalmia nodosa to the inflammatory reaction caused by the hairs of certain caterpillars (*Bombyx pini*, *Bombyx rubi*). These cause inflammation and the formation of small, firm, gray nodules in the substance of the conjunctival tissue, having a structure containing giant cells like tubercle and in the center a hair of the insect. The trouble is seldom limited to the conjunctiva. The cornea, ciliary body, iris and chorioid are commonly involved in time, and very serious results may follow the migration of the hairs. Treatment is surgical removal of nodules and combating inflammatory symptoms.

Other modern text-books of American origin briefly mention the disease, some stating that the nodules should be excised. I can find no American cases, although such may soon be reported if the new insect pest, the brown tail moth now colonized in Massachusetts, spreads over the country, for its own tail hairs, as well as its caterpillar hairs, are barbed and are said to produce a swelling in the human skin like a mosquito bite, which lasts a number of days.

Saemisch and Eversbusch were the first writers upon the subject, but I have not had direct access to their articles. The only detailed cases in the literature which I have read are the following:

Bewerens² case, in which there was violent conjunctivitis with iridocyclitis, developing within a few hours' time after contact of eye with crushed caterpillar; seen three days later, when a pea-sized vesicle at lower inner border of the conjunctiva was seen, with

1. Norris & Oliver Sys. Dis. of Eye, vol. iii, p. 247.

2. La Clin. Ophthal., Dec. 25, 1901.

swelling and redness of lids, moderate conjunctival chemosis. No conjunctival discharge; iris greenish and sluggish; pain and photophobia. Symptoms disappeared fifteen days later under "appropriate treatment."

Bayer's³ case: A black caterpillar, with some hay, was thrown into the eye; great pain immediately followed, remained some days and eye was red. Examined some days later, when cornea was found cloudy; three yellowish white nodules on cornea about size of pin's head; several also on periphery of iris; iritis. Treated with atropin and blood-letting; inflammation subsided after a long time; after the cornea cleared up, in a yellowish spot was found a caterpillar hair. This case is rare in that the deeper parts of the eye were apparently quickly affected. As a rule the disease has its seat in the superficial layers of the anterior part of the eye, and only after a considerable length of time does it pass into the deeper structures, following the course of the hair which works its way (wanders) into the deeper parts of the eye.

Fuchs⁴ says the nodules develop some weeks or months after the entry of the hairs.

My cases were not produced by caterpillar hairs, but were of a similar type, being a bee sting and a grasshopper hair or joint, respectively, but I think that they may be well included in this category.

Case 1.—January, 1898, a farmer, aged 63, applied to me, stating that the upper eyelid of one side had been sore since summer; that he had received much treatment from a local physician and also been treated in this city by a German eye doctor daily for over a month for what was said to be "granular lids." Examination showed ulcer of the cornea, above which was an elevated, rough, infiltrated area upon the bulbar conjunctiva. Corresponding to this on the upper lid there was an hypertrophied area, consisting of many enlarger papillæ, in the center of which a yellowish colored, hard swelling was observed. On staining with fluorescein solution, the center of the nodule on the conjunctival surface of the upper lid was observed to take the stain freely, and on manipulating same with a probe a small foreign body was found. This could not be brushed away and was removed with forceps. On examination under strong magnifying glass it was found to be a portion of bee sting. Needless to say, after removal of the foreign body and a few applications of 1 per cent. nitrate of silver solution, the "granular lid" rapidly healed and the ulcer of the cornea disappeared.

2. *Munch. med. Woch.*, No. 21, 1900.

4. *Text book of Ophth.*, p. 330.

Case 2.—September, 1904, a fireman, aged 35, consulted me concerning a localized, irritable swelling over the region of the internal rectus of the left eye, the redness and tumefaction extending over the inner half of the eye. This disappeared under adrenalin, and the area over the rectus showed as a yellowish elevated spot about the size of a split pea. This elevated area was movable with the rest of the conjunctiva and the subconjunctival tissue. Although he gave no history of rheumatism, and was otherwise strong and healthy, the affection was first diagnosed as an episcleritis. Sodium salicylate was ordered, hot compressing and 20 per cent. argyrol for local application. I also made several subconjunctival injections of 5 per cent. dionin. A week's constant use of these remedies proved unsuccessful. Further questioning revealed the fact that the eye had become sore nearly six months before, at which time a grasshopper had flown into it. Although no foreign body was visible, I was then convinced that there might be one in the lump, and, therefore, advised excision, which was accepted. The nodule was accordingly clasped by forceps, excised, and the edges of the conjunctiva stitched together. Immediate examination of the specimen, under a low power of the microscope, showed that it contained a double-jointed, hairy substance, evidently of animal origin, similar to the smaller hairs or ends of the antennæ of a grasshopper. Uninterrupted recovery took place, the patient being discharged a few days later as cured.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, FEBRUARY, 1905. VOL. XIV. No. 2. NEW SERIES

Editorials.

THE OPTICIAN AND THE MEDICAL PROFESSION.

The decision of the Supreme Court of Iowa seems to have given the opticians many anxious thoughts, as we find one of their strongest defenders claiming that they may go on with the healing art as long as they do not use the words heal and cure in their advertisements. Furthermore, he says: "It goes without saying that the results of the optician's work effect more in the way of healing and curing than does the doctor's medicine." Hence, the opticians claim to heal and cure, only they will not say so in public. Again the opticians of the Empire State are making strenuous efforts to legalize their examinations by another petition to the State Legislature this winter. These and other reasons should be sufficient to keep the question before the profession so that the time may come when we shall have it settled just what is or what constitutes the practice of medicine. The writer is inclined to take a conservative view, inasmuch as the existing conditions will not admit of any radical views either way. Perhaps in this rapid age of advancement we can not say: Let the subject stand as it is to-day. Yet this seems to be the only practical solution of the question. We can not say the opticians must not examine the eyes for errors of refraction nor sell glasses to correct them. That would be against the interests of the public, as we have no right to compel the presbyope to seek an examination from the oculist so that he may read his morning paper when we know that presbyopia is simply a normal physiologic loss of power in the ciliary muscle due to age. But we can say that when any person has a defect in the visual acuity, then some pathologic condition is probably present in some part of the ocular apparatus and the case should be in the hands of those whom the laws have stated are qualified to do this work and who take the responsibility. Now, it goes without saying that when any body of men apply to a legislative body to legalize them to do a cer-

tain work or to practice a certain profession that legislature must legalize them to do all the work pertaining to it. This entire work the opticians can not do, according to the present laws, as it is well known that the accompanying complications of many cases of refraction require the services of a physician who is skilled in the use of certain drugs and for the effects of which he must take the responsibility, the same as the dentist in the treatment of the teeth, and this is a serious responsibility for which the opticians do not ask. Hence, the optician can not say, when he applies for his legal authority, I will only examine and treat certain refractive errors and refer the most difficult cases, as spasm of the accommodation or antimetropia, to the physician, exactly the condition which exists at the present time. Such laws might stop a few itinerant vendors of glasses, but that is a small affair, and frauds will always exist. If any legal action is necessary the writer would look at it in a broad light and state that the authorities should define just what part of this work may be permitted by the opticians, the same as the laws have restricted the druggists. To this effect the writer would suggest that no person can legally advise, sell or give away glasses, either refractive or prismatic, to any person whose visual acuity is below the normal, i. e., below 20/20, or that can be made normal by the aid of glasses, except those legally authorized to treat pathologic conditions and to take the full responsibility for the same. The normal acuity is well known to all opticians, by which their work should be regulated, and I would venture to say that many reputable opticians will not fit or sell glasses to any whose vision they find to be below this normal standard. If, as suggested above, the vision is normal, either with or without glasses, the writer can see no objection to any one examining the eyes and giving glasses, but when it is below the standard then it comes within the domain of pathology, in which the optician has no right to practice according to the laws as they stand to-day, no matter how competent he may be in the use of the objective methods of examination.

F. VALK.

EMPIRICISM.

Empirical prescribing is largely justified on the grounds of clinical results. What constitutes a good result clinically is open to question, for the reason that it can not be known what the result would have been without medication. Empirical prescribing may be justified on the ground that if it does no good it will at least do no harm. The physician, in his effort to do something to satisfy the

patient's desire to have something done, may use a remedy that has given him satisfaction in the past in just such cases, in which the causation is obscure and the tendency to repair slow. Empiricism, when under wise guidance, may be productive of much good. This is evidenced by recent discoveries in etiology. Certain drugs which were formerly used empirically are now indicated scientifically. The specifics were almost all used empirically, the clinical results justifying the appellation *specific*.

The eye, being closely related to the brain and yet having almost a separate nervous organization, dependent upon the general vascular supply for its nutrition and yet using this blood for other purposes than for its nutrition, is liable to disease not only by extension, but by direct and indirect systemic disease, and is capable through its own peculiar arrangement of becoming diseased while the general organism is apparently functioning normally. We see cases of disease of the sclera, cornea, retina, choroid and optic nerve in people who apparently are and always have been perfectly healthy. We use in the treatment of such diseases remedies that are believed to act upon the glandular system of the body and thus eliminate certain supposed poisons, which, while not discoverable, are considered active in the causation of many of our ills.

Potassium iodid and mercury have been for years the two drugs that have had the largest empirical use. At times we feel that very decided results have been obtained. Still we do not know but that the same perfect recovery would have taken place in the same length of time, or even sooner, had they not been prescribed.

We present a case before a clinical society, and are advised to prescribe iodid of potassium. We are told to push it to a point of intolerance, and then drop back to a point of tolerance and to continue at that dose. We try it. The patient is upset generally, feels ill and wretched, and yet we have not reached intolerance. We go on increasing the dose until his breath has an odor that certainly never came from a normal human being. His stomach refuses to properly digest food and his nutrition becomes subnormal. We begin to wonder, if we are given to such speculation, whether we are assisting nature in effecting a cure or whether we are really placing obstacles in her way. Still, we must do something or the patient will go blind. It is a case of the blind leading the blind, and empiricism is the leader. The patient certainly becomes ill under such empirical management. Nature becomes rebellious and refuses to use her restoratives in the presence of such an impostor. This picture is not overdrawn. We see just such cases frequently. They may be our own or those of another.

If we speculate a little, and this should not cause brain fatigue, should not the rational conclusion be that we do not have to make a man sick in order to cure some obscure ailment? Would it not be more in accordance with nature's laws to utilize her forces rather than combat them? This principle should be the first instruction given in a medical course and not the last to be learned by hard experience. Remember the patient comes to us apparently physically normal except for an obscure ocular disease. By a careful examination of his blood and excretions, as well as his salivary secretions, and his heart, lungs, viscera and vascular system, we may find something that will help us in the etiology of his eye affection. Then by assisting nature to the promotion of a normal function in the weak spot shall we not do more in the right direction than by heroic empirical dosing? It is possible that we may find no medication needed. Correct hygiene, the intelligent use of massage and baths, the internal use of large quantities of pure water, and supervision of the diet may soon not only improve the ocular lesion, but will serve to educate our patient so to live that future recurrence of his old trouble will not take place. MELVILLE BLACK.

PROGRESS IN THE LIGHT OF KNOWLEDGE, WORK, AND CHARACTER.

As a branch of applied science, the rapid progress of medicine in this country within recent years is a subject for congratulation. Every one of its departments has been directly enriched by the discoveries in allied departments of general science, and ophthalmology to a remarkable degree.

The personal units, the individual students and workers who are reaching out and appropriating this available knowledge, are not of equal value; indeed, there are many who are almost zero or negative quantities, and a survey of the field of ophthalmology at this time may afford food for reflections that are not entirely satisfactory.

Undoubtedly medical men *en masse*, the body medical, has periods of activity and inactivity, of productiveness and unproductiveness. At one time keenly interested in some new phase of its own development; at another difficult to arouse and apathetic. Gynecologists, some years ago, as is well known, exploited a mania for meddlesome surgery, later returning to a comparatively conservative frame of mind. Ten years ago heterophoria occupied the center of the stage of ophthalmology, and a similar reign of meddlesome surgery, in its turn, was succeeded by the present era of

waiting and working out the perplexing functional vagaries exhibited by asthenopes, and this in the light of hygiene, the physiology of the nervous system in general, and that of the ocular apparatus in particular.

The more obvious structural diseases of the eye due to inflammatory septic tissue changes are certainly those which chiefly interest the average oculist. They afford the chief opportunities for the application of such astonishing discoveries as physics has contributed in the *x-ray*, and bacteriology and industrial chemistry in that of antiseptics; the results of treatment are generally prompt and often brilliant; they are also the more remunerative. The fairly studious, careful, intelligent oculist is, moreover, apt to be a very busy man. It is often difficult for him to especially individualize his cases, and still more difficult to collect, compare and record data of phenomena which occur, and which might, if properly handled, result in original discoveries of great value to mankind.

Yet, going back to the idea with which we started, it is he who finally applies the facts derived from general scientific sources, or, by intelligent observation, supplies the indispensable link, while often only his bread and butter stands between his ideals and the actual. It is not at all certain, however, that this apparently crude form of natural evolution of knowledge in the midst of daily toil has not its advantages. It surely has its compensations; it is a *natural* evolution as distinguished from the artificial efforts of the mere theorist or laboratory routinist.

Nevertheless, the most valuable contributions to ophthalmology, not always heralded, rewarded, or at first understood, have been those of men who, having the foundation of a thorough and symmetrical education, have cultivated habits of observation, accuracy and industry. There is a certain sanity in all they do, write, or say. Particularly are they distinguished as being comparatively free from the incentives of personal gain and selfish ambition now so glaringly in evidence in financial and commercial circles.

By them success is not so much measured in terms of dollars as in those of truth attained, knowledge gained and imparted, and all to the end that suffering and sorrow may be alleviated.

In the last analysis, therefore, of what counts most in advancing any branch of medicine, the element of character is fundamental and paramount.

Now, practically, can we do anything to increase the proportion of such men of intellect and character in the profession in America? There is need. The quack, the prescribing optician and "optometrist" can not be discredited in the eyes of a non-discerning

public by abuse, ridicule, or even by legislation. It is, for instance, careless refraction work, inability to detect and correct disturbances of binocular vision, or unwillingness to give the time for either, and to exact honestly an adequate fee for the performance of this most difficult work, that gives the prescribing optician much of his vogue. Not once, but again and again, honest and capable opticians have offered to cease prescribing and to dispense only, if they could secure sufficient professional patronage, and have failed. Why?

Undoubtedly the improved standard of medical education has done and will do much to raise that of American ophthalmology. But there appears to be, so far, no united, intelligent coöperation in this direction among its teachers in the faculties of our great medical schools. There has been some development and agreement, the trend of which is mainly in elimination and concentration so as to fit the crowded curriculum. It is a question whether or not medical students who have creditably pursued instruction in the subjects taught during the first two years should be permitted to elect a special course in ophthalmology, each portion of which shall be symmetrically related to every other, and include, for instance, geometrical and physiologic optics, ophthalmology, skiascopy, keratometry, accurate location of foreign bodies, etc.

The question of character belongs to us as citizens, fathers and patriots. To discuss it in the pages of a scientific journal may appear incongruous. Its details do not belong here. But even so, we dare not ignore it as a personal duty. No day passes that we do not have occasion, sometimes unconsciously, to make his character the base-line by which we estimate our personal relations to and the degree of our confidence or mistrust in our fellow-workers.

F. B. EATON.

Correspondence.

HEALTH OF PUPILS IN PUBLIC SCHOOLS.

CHICAGO, Feb. 2, 1905.

To the Editor: Dear Sir—I thought your readers would be interested to know of the following act just passed by the legislature of the state of Vermont, making it obligatory throughout the state that all public school children shall have their eyes and ears annually examined by their teachers. The state of Connecticut passed a similar law some three years ago, but the one passed in Vermont is better. It is hoped that the action taken by these two legislatures will be followed by similar acts in other states.

92 State St.

FRANK ALLPORT.

No. 46.

AN ACT PROVIDING FOR THE BETTER CARE OF THE HEALTH OF PUPILS IN PUBLIC SCHOOLS.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The state board of health and the superintendent of education shall prepare or cause to be prepared suitable test cards, blanks, record books and other needful appliances to be used in testing the sight and hearing of pupils in public schools and necessary instructions for their use; and the superintendent of education shall furnish the same, free of expense, to every school in the state. The superintendent, principal or teacher, in every school, during the month of September in each year, shall test the sight and hearing of all pupils under his charge and keep a record of such examinations according to the instructions furnished; and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or diseases of eyes or ears, with a brief statement of such defect or disease; and shall make written report of all such examinations to the superintendent of education as he may require.

SEC. 2. The state auditor is hereby directed to draw his order on the state treasurer for such sums and at such times as the superintendent of education, with the approval of the state board of health, may require to carry out the provisions of this act. The total expense under this act shall not exceed six hundred dollars in any biennial term ending June thirtieth.

SEC. 3. This act shall take effect July 1st, 1905.

Approved November 17, 1904.

Reviews.

- I. A FEW EXPEDIENTS IN CATARACT EXTRACTION.*
- II. PERSISTENT ANTISEPSIS AFTER EXTRACTION.
- III. THE USE OF HEAT AND COLD AFTER DISCISSION
FOR CONGENITAL CATARACT.
- IV. MASSAGE AS AN AID TO LOCAL ANESTHESIA.
- V. MISCELLANEOUS NOTES.

BY ERNEST E. MADDOX, M.D.

[Reviewed by Melville Black of Denver, Colo.]

The author believes that the technic of the operation for cataract extraction is very nearly perfect. The fact that some eyes do not respond gratefully to it shows that there is still something to be desired. Maddox believes that he has discovered two simple procedures which overcome the principal causes of failure, namely: deficient vitality or "resisting power" of the tissues, and infection from the conjunctival sac, particularly where the lachrymal passages are abnormal. The means employed to overcome these difficulties are, respectively, a conjunctival suture and a persistent antiseptic dressing applied over the tear passages.

Williams of Boston is given credit with having proposed the corneal suture in 1868, but Maddox has been unable to find that the conjunctival suture has heretofore been used. He has evidently overlooked the work done by Kuhnt and Zermak, who have both proposed suturing the conjunctival flap in cataract extraction.

Maddox does not describe how the section and conjunctival flap is made, but we infer that in completing the regular corneal section the knife is carried on underneath the conjunctiva until a conjunctival flap of from 2 to 3 mm. is secured, and that one or two sutures are used to secure the flap after the lens has been removed. He emphasizes the necessity of rendering the suture absolutely aseptic and of not allowing it to touch the eyelashes or face while it is being introduced. If the tail of the suture is held by an assistant with forceps at this time there is no need of its touching the surrounding parts. Special needles are required, which are about one-half the size of the smallest ophthalmic needles in use, also a special needle holder designed to handle these very small needles.

*Ophthalmoscope, London, November, 1904.

"In a few patients it is not wise to attempt any prolongation of the operation, but my rule now is to put in a conjunctival suture whenever it can be safely and conveniently done."

The author leaves the technic of the operation largely to our imagination. If only one suture is used the presumption is that it is placed at the summit of the conjunctival flap and that it is only engaged in conjunctival tissue. That if more than one suture is used they are placed in the conjunctival flap at appropriate distances apart to thoroughly secure the flap to the adjacent conjunctiva above.

Maddox believes that this suturing insures such a perfect coaptation of the flap that it becomes firmly adherent in a very short time. Unfortunately we are not instructed as to how long the sutures are to be left in position. They must be removed some time, and it would seem that this should be done upon the second or third day after their introduction. This would demand a careful preparation of the eye, local anesthesia and probably the use of a speculum, all of which, it seems to me, greatly complicate the after-treatment of a cataract extraction.

The advantages enumerated by the author and commented upon at some length are "speedier union, protection from infection, greater security from accident, smaller prolapses, greater freedom for the patient, fewer rejected cases and open dressing facilitated." The possible objections that he thinks may be raised against the conjunctival suture are "their aid is small, the danger of sepsis, the operation is prolonged and an astigmatic effect may follow if the suture is placed carelessly so as to tie up too much conjunctiva." In commenting upon these disadvantages the author considers that the advantages very greatly outweigh the disadvantages. He does not consider that the suture increases the danger of sepsis if it is properly placed. This danger of sepsis, it seems to me, is of great importance. The author concedes that one of the principal reasons for this addition to an almost perfect cataract operative technic is that some eyes are deficient in "resisting power." I suppose this means that they are incapable of successfully combating infection. It is a well-established surgical fact that sutures beget infection. Therefore, it would appear that infection of the wound is more likely to occur with than without them. Hence his entire argument falls to the ground, since he fails to justify his principal reason for the introduction of the suture.

Harold Gifford¹ thought he had in the purse-string suture of the conjunctiva a sure preventive of infection in cataract extraction

1. American Journal of Ophthalmology, November, 1904.

and proposed to give all his cataract patients the benefit of this additional safeguard. The results in his first three cases were ideal. Then followed in swift succession two infections. The suture of Gifford is not placed any nearer to the wound than is the suture of Maddox.

PERSISTENT ANTISEPSIS AFTER EXTRACTION.

This is accomplished by Maddox by placing over the closed lids a small teaspoonful of finely powdered boric acid in the hollow between the eye and the root of the nose. Sometimes he places a small circle of the finest bishop's lawn over the inner canthus before adding the boric acid. He finds that this procedure, with or without the lawn, does not add materially to the discomfort of the patient. He believes that the lachrymal apparatus is a prolific source of infection and that the tears keep the part thus covered with boric acid bathed in a mild antiseptic solution. If the presence of the boric acid does not cause discomfort, this procedure would certainly be an additional safeguard in cases where the lachrymal passages were suspected of not being patent or where nasal ozena was present. It is a very easy matter to determine if the lachrymal passage is patent by syringing through it into the nose. If it is not patent, I would not feel safe in depending upon boric acid as used by Maddox, but should first close each canaliculus with a securely tied suture, after the method of Casey Wood, then the boric acid could be used as a further guard against infection.

THE USE OF HEAT AND COLD AFTER DISCISSION FOR CONGENITAL CATARACT.

"Considerable diversity of practice seems to exist with respect to the use of hot and cold applications after discission for cataract and for the operative treatment of myopia. Some use ice only, and that for a needlessly long term; others use nothing at all, and few, if any, use heat." Maddox finds that ice is valuable in every case from the second to the eighth hour, or thereabouts, after the operation; that it aids the atropin in dilating the pupil. After this its benefit is doubtful. Where the lens swells rapidly, heat may become indicated as soon as the tenth hour, but usually not until the morning after the operation. He very tersely puts it thus: "*A small pupil shortly after operating cries for ice. A dilated pupil with swelling lens, and especially if with rising tension, cries for heat.*" Heat should be applied for from ten to twenty minutes every two hours. He makes another point, that the heat should be applied with the face up, not down, as is the usual custom, especially if the patient himself applies it. His reason for this is that the engorged

veins can more freely empty themselves with the face up instead of down. These are very valuable suggestions. I have no doubt that hot and cold applications thus used will give better results than the haphazard methods in general use.

MESSAGE AS AN AID TO LOCAL ANESTHESIA.

Anything which will assist in promoting anesthesia of the iris in the presence of glaucoma will be hailed with delight, especially so simple a procedure as massage. Maddox drops the cocain solution on the site of the operation and then through the closed upper lid performs massage. He claims that he has been able to do a painless iridectomy for glaucoma in cases which would otherwise have required chloroform.

MISCELLANEOUS NOTES.

The speculum Maddox prefers is one that has a guard for the lashes of the upper lid only. This demands a speculum for each eye. He finds that a speculum that has guards for the lashes on each blade interferes with the use of the fixation forceps below. Of late I have been using the speculum devised by Stevenson, and find that the guard on the lower blade does interfere with the free use of fixation forceps below. If, however, the double fixation forceps of Morton are used this does not obtain, since the bite is taken on each side of the cornea sufficiently high to enable the operator to rotate the globe well downward and still not find the lower guard of the speculum in the way.

For a sterilizer Maddox likes one which carries everything required exposed to view on a single tray, including pledgets and eye-droppers. This certainly would be a convenience were one doing much operating in private houses.

Maddox has devised an electric warmer that is placed in the dressings after extraction, which is very light and not cumbersome. The connecting electric cords can be attached and disconnected at will. He has found this of value in eyelitis and ciliary neuralgia, as well as in cases of very old people with low vitality. The possible objection to this method of applying heat, it seems to me, is that the connecting cords might easily be in the way of the patient's movements, become entangled with the bedding or pulled upon by the hands of the patient and thus disarrange the dressings.

Maddox favors the use of strong pilocarpin solution immediately after simple extraction. Many able men disapprove of this, because of its likelihood of exciting iritis. Personally I question if it has much, if any, effect in the presence of an empty anterior chamber.

In the adoption of a routine measure one is very likely to use old solutions filled with germs instead of fresh ones that are sterile.

Maddox thinks dionin should not be used during the first few days after extraction, because of the sneezing it is apt to excite, but believes that it is of value thereafter, since it hastens absorption of the lenticular remains.

THE TREATMENT OF PURULENT CONJUNCTIVITIS.*

BY MILES STANDISH, M.D.

BOSTON.

[Reviewed by Frank Todd, M.D., Minneapolis.]

This paper is a valuable contribution upon this subject, consisting of an analysis and study of the treatment of gonorrheal ophthalmia treated in the Massachusetts Charitable Eye and Ear Infirmary, with particular reference to the comparative value of nitrate of silver, protargol and argyrol. The author calls attention to the fact that for many years nitrate of silver has been the accepted topical application in the treatment of this disease, all other remedies, such as corrosive sublimate, permanganate of potash, iodoform, etc., being inferior.

"When nitrate of silver was relied on for the direct treatment of the disease the manipulations necessary to properly apply it and to wash off the excess of the solution greatly favored injury of the cornea with subsequent infection and ulceration, and cases where eyes were lost or vision destroyed were often due to this process."

ANALYSIS OF TREATMENT OF OPHTHALMIA NEONATORUM.

Number cases.	Drug used.	Patients having clear cornea on admission developing ulcer sufficient to interfere with vision.	Average days in hospital.
50	Silver nitrate	.....6%	23 ¹ / ₂
150	Protargol 4%	.....3%	Not stated.
50	Protargol 20%	.....0	16 ¹ / ₂
64	Argyrol 15% to 50% Sol.	.....0	18 ² / ₃

"A solution of protargol or argyrol can be applied by simply pouring the liquid between the opened lids; moreover, the specific gravity of these solutions is such that, sinking to the bottom of the cul-de-sac, pus and mucus are floated to the surface and can be removed much more easily without the manipulative dangers to which patients were formerly exposed."

The marked improvement in the results obtained by the use of either argyrol or protargol over silver nitrate is conspicuous, as is

*The Journal A. M. A., Dec. 17, 1904.

likewise the difference between the weaker and stronger solutions of protargol. The results obtained in the use of strong solutions of protargol and argyrol are remarkable when compared with the old treatment, but in keeping with the records of other observers, and the length of time under treatment will doubtless be decreased still more after more experience with these drugs.

Standish also noted that there were 9 cases entering with hazy cornea treated with argyrol, in only one of which did ulceration follow. These cases remained in the hospital on an average of twenty-two days. In 9 other cases which entered with corneal lesions only one eye was lost. "The routine treatment consisted in washing the edges of the lids with a solution of boric acid once in half an hour, to put when necessary a little vaselin along the edges of the lids to prevent them from sticking together and to instill a solution of protargol or argyrol freely between the lids at intervals of from every hour to once in four hours."

"Cases in which there was hazy cornea often had pilocarpin in 0.5 per cent. solution instilled once a day. Atropin was rarely applied except in cases where the cornea was involved, and no case was discharged until two negative smears had been examined under the microscope on successive days."

RESULTS OF TREATMENT OF GONORRHEAL OPHTHALMIA WITH PROTARGOL AND ARGYROL IN PATIENTS OVER FIVE YEARS OLD.

	Per cent. used.	Entered with clear cornea.	Discharged with clear cornea.	Entered with corneal lesion.	Discharged with leucoma	Lost or total leucoma.
Protargol	10	18	14	10	13	1
Protargol	20	12	5	6	10	3
Protargol	30	1	1			
Protargol	40	1	1			
Total		32	21	16	23	4
Argyrol	15	2	2			
Argyrol	25	12	8	7	6	5
Argyrol	50	9	6	7	7	3
Total		23	16	14	13	8

The author states: "It would appear from the above tables that while the percentage of successful results with the two agents was not materially different in cases which entered with clear cornea, that once the cornea has become involved protargol seems to control the case more effectively."

As to the comparative value of protargol and argyrol in the treatment of gonorrheal ophthalmia occurring in the adult (or all cases not newborn), the table is not conclusive, as the cases are too few, the strength of the solution varying so much, and there are too many other things to be considered, as, for instance, the nurs-

ing, for there is a vast difference in handling these cases. Some nurses are far more adept in the cleansing and making applications, and some may do damage, may even, as happened in one of the reviewer's cases, cause an abrasion of the cornea which will be rapidly followed by ulceration, some will be far more conscientious in carrying out orders than others: quite as much depends upon the nurse, in fact, as upon the remedy used. Then, again, there is to be considered the age and resistance of the patient, previous condition of the eye and other treatment, such as the use of cold applications, which the author states varied in the treatment of these cases depending upon the ideas of the several physicians directing treatment. To secure statistics, from which comparative results may be conclusively drawn, the same strength preparations of argyrol and protargol should be used, one in one eye and one in the other of the same patient, by the same nurse, treating the two eyes at the same time. The reviewer has been conducting such a series of experiments in ophthalmia neonatorum for some time, using 50 per cent. solutions (in glycerin) of protargol and argyrol, and has found that the results in respect to rapidity of cure favors protargol to a marked extent, though the results as compared to other cases treated with silver nitrate are so much more favorable with either of the salts as to be unmistakable.

The author calls attention to the use of cold, which he thinks is inadvisable at any stage of the disease. He says: "The rationale of the cold applications is somewhat difficult to see. If it is done merely to reduce swelling of the lids, ought not heat to be employed instead? Elsewhere heat promotes absorption in edematous conditions. If it is done, as I have heard it stated, for the sake of inhibiting the growth of the gonococcus, it does not seem to be any more rational. Neisser, in his recent article in Kolle and Wassermann's work, states that the growth of the gonococcus is inhibited when the temperature is reduced below 86 degrees Fahrenheit, and it is improbable that in any case the application of iced compresses to the lids could reduce the temperature below 86 degrees." The author, "caused the temperature in the conjunctival sac to be taken every hour. It shows that before the cold applications were made the temperature was 100 degrees, that during the application of cold the temperature fell to 98 degrees. On the removal of the cold the temperature rose to 99.5 degrees, and on the cold being renewed it was reduced as before."

In the discussion Dr. Ramsey pointed out that cold applications gave great relief from pain, and Dr. Weeks called attention to the fact that while the growth of the gonococcus ceases when the tem-

perature is from 88 to 86 F., or below; a temperature of 96 to 88 inhibits its growth to some extent, and that he had found the temperature of the conjunctival sac to be reduced to 92 by the use of cold applications.

It would seem, therefore, that the action of cold may inhibit the growth of the germs to some extent, but even if it does we have in protargol or argyrol drugs which will destroy the germs with far more certainty and with no possible damage. If the cornea becomes chilled and the lymph channels, through which the cornea derives its nutrition, become contracted, the resistance of the cornea is certainly reduced, but the cornea may not become chilled if the lids are swollen, as the lids would protect the cornea against thermal changes, while no one will deny that the cold applications will promote reduction of swollen lids, and this is very desirable to bring about early, not only because it reduces the inflammation in the lids, but more particularly because it facilitates the cleansing of the eye and the treatment of the disease. After the lid swelling has been reduced the application of cold would not seem to be of any real therapeutic value, but dangerous to the cornea.

The author very correctly calls attention to the danger in the overmanipulation of such eyes with retractors, etc.

From this paper and its discussion it is evident that we have in these two drugs remedies which are far more valuable than any which have heretofore been used in the treatment of this disease, *that every case of gonorrheal ophthalmia in the newborn is curable when taken before the cornea is involved and when properly nursed*, and that protargol seems to be somewhat more efficacious in the treatment of this disease than argyrol, though the latter is not in the least irritating, while the former in strong preparations often causes much irritation and sometimes severe pain. To aid in cleansing, a watery solution of these drugs is perhaps best, but to allow of longer retention, to prevent the lids from adhering and as a protective of the cornea an oily preparation would seem to be preferable, and the reviewer would suggest that an aqueous solution of one of these salts to be used in cleansing, after which the same drug mixed with an oily medium (as suggested by Dr. N. M. Black) be instilled.

THE RELATION BETWEEN THE OCULAR MUSCLES AND REFRACTION.*

S. M. PAYNE, M.D.

[Reviewed by E. C. Ellett, M. D., of Memphis.]

Articles of this sort are good ones to read now and then, not that they contain much that is new, but they emphasize and classify the lessons which are daily brought to the notice of the refractionist and recall us from the extreme views of the enthusiast. The ideas embodied in this article are those which are laid down in conservative books and which are followed in practice by the great majority of ophthalmologists. That too much attention is yet paid to the muscles at the expense of careful refraction one is apt to believe from certain writings and also from meeting with cases in practice which have been through the hands of one who attaches much importance to muscular asthenopia. In this paper we are told at the outset that the writer does not follow the practice of partial tenotomies, prisms or exercise for heterophoria, finding that the wearing of proper glasses has, in his experience, not only relieved the symptoms, but the objective manifestations of the muscle error as well. In our experience the former is generally, the latter partly true. Judging from case reports, the writer relies not at all on duetion tests, doubtless having been through this part of the work and finding it fruitless. It is probable that if uniformity existed in the method of making these tests, results would be more uniform and could be profitably compared. If prisms are suddenly placed before the eyes and the images separated to a considerable distance, the fusion faculty works at a disadvantage, and it is likely that until the knack of fusion is learned only weaker prisms will be overcome. If some such plan as that embodied in the Risley prism, or other form of prism mobile, is employed, a much higher degree, at least of prism convergence and prism divergence, will be found.

While on this point it seems well to call attention to the necessity of making these tests with a prism over each eye. A prism of, say, 15° may be placed over the left eye, base out, and the prism mobile over the right eye so turned as to represent a prism of 15° , base in. Now, by turning the prism mobile, we pass gradually up the scale, and the work is divided between the two eyes, if not equally, at least more equally than when the prism is used over one eye only. Or two Risley prisms may be used.

In the matter of tests for hyperophoria the preference is given to the Maddox Rod, and for a reason which we think is good and for

*Archives of Ophthalmology, July, 1904.

which the test was devised, namely, to give dissimilar images for the two eyes and thus do away with any incentive to fusion or other effort that would interfere with ascertaining the tendencies of the visual axes, uninfluenced by these agencies.

If we are to found our ideas of ocular pathology on the broad lines of general pathology, we must agree with what the writer says in regard to weak muscles and short muscles as a cause of heterophoria. The former may exist as a weak internus with myopia or a strong internus in hyperopia, depending on the associated activity, or the lack of it, between the interni and the ciliary muscle. And it is just on this point that the author dwells that, except for this cause, we have no over or under development of these muscles, excluding paresis, and no short muscle, except as the result of traumatism on destructive disease processes. In no other part of the body is there any such state of affairs found, although we must remember that nowhere else is such delicacy of testing possible. Still, tests of other muscles that are as delicate in proportion to their functions are possible, and nowhere do we find one of a group of muscles all having the same nerve supply, singled out for functional disease. In regard to tenotomies for squint we also confess a sympathy with the writer. Of all uncertain performances this is the most uncertain. We are taught that a tenotomy, as a rule, produces 15° of result, but how often do we see the operation barren of result, sometimes leaving (in heterophoria) more error than first existed and finally to be followed in after years by a wandering of the ball 50° or 60° from its original position? Who can tell which of these results will follow a tenotomy, and when it does, why it did? No wonder, then, that advancements have gained in favor as offering a method of greater certainty. In our opinion, the operation of advancement is yet a difficult and far from certain procedure, and the writer has added a single stitch operation which, if it is as simple as it sounds, will certainly be a valuable addition to the list.

So far, then, we are in accord with the views of the writer. With other matters which he presents we can not entirely agree. It seems strange that there should exist a school of ophthalmologists, fortunately small, who are blind to the value of cycloplegics as an aid to the accurate estimation of errors of refraction. Though nowhere affirming this, the writer of the paper seems to belong to this company. Surely it is unnecessary to dwell on this point. That we all can, with increasing experience, fit a surprisingly large proportion of patients satisfactorily without the aid of cycloplegics is well known, but it is equally well known that we never know what the

static refraction is under these circumstances, and without knowing that the study of the relation of muscle errors to errors of refraction is a question of dealing with a problem in which x is known, y is guessed at, to find the value of z .

Some of the propositions advanced by the writer are new and merit consideration. In speaking of H he says it is always equal in the two eyes when astigmatism is present in one or both. If he refers to the static refraction, hundreds of cases could be cited to prove to the contrary. Regarding the manifest error in such cases, there is no doubt that in cases of unequal H the two ciliary muscles will not be on the same tension and can not be expected to relax to the same degree. If we have $OD+1$, $OS+2$, we are not apt to find that this correction or any equal reduction from both eyes will give comfortable vision. Rather in many cases must we make a greater reduction in the glass for the eye showing the most H , and possibly for eyes that have not used glasses the same strength of glass may be at first preferred. A measure of the static refraction would dispel this delusion. To spend time on such points as this is not necessary, since each case is a law unto itself.

That hyperphoria is due to unequal refraction in the two eyes may be usually, but certainly is not always true. We recall the case of a young man, with 2° L.H., and 25° Es. Under atropin his correction was $OD-13$, $OS-13$, I. cyl. ax. 90° . With this he had 4° L.H. and 20° Es. Four years later, during which time he had worn -10 , and $-10 \bigcirc -I$ ax. 90 constantly, he showed 6° L.H. and 25° Es. No asthenopia. He has worn this correction nine years, with the same muscle errors, but no symptoms.

The whole question of this paper resolves itself into a question of the ability to measure errors of refraction without cycloplegia. To attempt to draw lessons as to the relation between muscle errors and errors of refraction when the latter represent only manifest corrections is "futile piffle."

Reports of Societies.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

By courtesy of the officers of the Illinois State Eye and Ear Infirmary, the meeting of this society was held at that institution Tuesday evening, Dec. 20, 1904, at 8 o'clock. Dr. Oscar Dodd, president, in the chair.

Dr. Norval H. Pierce presented a case of tenectomy, with marked improvement in hearing. He also showed a case in which the radical mastoid operation had been performed.

Dr. H. W. Woodruff presented two cases.

CONGENITAL PTOSIS, OPERATED BY THE FERGUS METHOD.

CASE 1.—In operating, incision had been made in the eyebrow along its whole extent, this being the only skin incision. The skin was then separated from the underlying tendon and fascia of the occipitofrontalis muscle upward for a distance of about two inches above the incision. Below the separation was made to expose the tarsus almost to the lid margin. Next a vertical band of the occipital frontalis, about three-fourths of an inch broad and two inches long, was dissected up, being left attached only at its upper border. The free end of this band was drawn down and fastened with catgut sutures to the tarsus. The skin wound was then closed. Two photographs were shown.

CICATRICIAL ECTROPION.

CASE 2.—Both upper and lower lids in boy 10 years old, result of burn when 4 months old. Two skin-grafting operations had been performed after the method of Hotz, using the scar tissue for lid flaps.¹

Dr. Wilder presented the following cases:

CASE 1.—A man, 30 years of age, who four weeks before admission to the hospital developed marked exophthalmus of the right eye. The skin of the lids was much reddened and swollen. The conjunctiva was markedly injected and edematous, so that the condition resembled somewhat orbital cellulitis. There was no elevation of temperature, no pain on pressure. Both cornea showed unmistakable signs of a past interstitial keratitis. The bridge of the nose was markedly flattened. There was no history of acquired syphilis. Large doses of iodid of potassium, reaching 120 grains,

1. Jour. Am. Med. Association, May 2, 1903.

three times daily, caused a marked change in the condition, so that four weeks after the treatment was begun the eye had returned to nearly its normal position.

CASE 2.—A woman, aged 68, who had been presented at a previous meeting of the society. She had marked convergent strabismus to such an extent that the cornea was barely visible. The left eye had been benefited by a tenotomy of the internal and inferior recti muscles, combined with advancement of the external rectus. The right eye was treated in the same way and a nearly perfect result followed. A detailed report of this case will be published later.

CASE 3.—Child, 4 years old, whose left eye became infected with a purulent ophthalmia. The gonococci were present in abundance. The course of the disease was very severe and the conjunctiva was so edematous that frequent scarifications around the cornea were necessary, but the cornea escaped infection. After the subsidence of the inflammation and the disappearance of the gonococci the ocular portion of the conjunctiva to the nasal side remained markedly swollen and infiltrated, projecting between the lids. It was thought at one time that a sarcoma was developing, but sections from an excised portion of the mass revealed only marked hyperplasia of the conjunctiva tissue. The mass gradually diminished in size under regular applications of iodoform powder until the conjunctiva assumed nearly its normal appearance.

CASE 4.—Young man, 19 years of age, who had primary optic atrophy following a spree. He, with his companions, had spent two weeks at a picnic, during which time, according to his account, large quantities of whiskey, beer and spirits were consumed. Before the picnic had finished he noticed his sight was failing. At present there is almost complete atrophy of the optic nerves. It has been impossible to learn whether or not the liquor consumed was adulterated with wood alcohol, but there is a suspicion that the bitters that were used might have been impure. None of his companions suffered similarly.

KERATITIS.

Dr. Oscar Dodd presented a case of keratitis of an interstitial character (disciformis) in a boy, 7 years of age, who had suffered an injury two weeks previously in which the face was badly bruised, the leg and arm injured. The attending physician observed that the right eye was inflamed the day after the injury, and prescribed atropin. When first seen the eye was observed to be markedly inflamed, ciliary congestion, cornea hazy and iris dis-

colored. Pupil but slightly dilated, although atropin in strong solution had been used. Slight hypopyon was present. Under treatment, atropin, dionin and hot applications, with iodids and mercury internally, slight improvement occurred. But one week later a dense opaque ring was seen to be forming on the posterior surface of the cornea. At the end of ten days the left eye became inflamed, with much the same appearance as had been observed in the right eye. At the present time a disc-shaped opacity in the center of each cornea is still present. The inflammation has largely subsided.

Dr. Willis O. Nance presented a case of congenital pigmentation of the sclera.

Dr. E. K. Findlay presented for Dr. W. E. Gamble a case of optic neuritis, specific.

Dr. Dwight C. Orcutt presented a case of tumor of the choroid, left eye, in a patient 60 years of age, who had been under observation about four months. When first seen, had observed a dull, reddish-colored tumor about the size of a pea lying on the ciliary body and touching the lens. At the present time this growth has sufficiently increased to appreciably narrow the anterior chamber and cause a slight bulging in the cornea-scleral juncture on the temporal side. The patient has had anti-syphilitic treatment, notwithstanding which the tumor has gradually increased in size.

Dr. E. V. L. Brown exhibited a number of pathologic specimens illustrating the condition referred to in the following recent publications:

SCHIECK (Göttingen, *A. f. O.*, vol. lviii, 1, April, 1904). Vernal catarrh. The process is essentially and primarily a proliferation of elastic tissue, a large amount of which is found in the areas especially affected by the disease, namely, the tarsus and the limbus. His description and colored drawings of sections stained by the special methods seemed conclusive. Dr. Brown could corroborate these findings in a case sent by Dr. Knapp of Evansville, Ind., in which the sections were taken from tarsal excrescences.

2. In a subsequent issue (vol. lix, 3, November, 1904) Schieck showed that this elastic tissue proliferation clearly and finally differentiates vernal catarrh clinically from such allied affections as conjunctivitis hyperplastica, from pterygium, pinguecula, and trachoma, and also that the earliest stages of milky cloudiness of the conjunctiva are likewise due solely to this beginning, elastic tissue proliferation.

3. RUMSCHWETISCH: (Kiew), *K. M. f. A.*, October, 1904, concerning so-called verruca laminae basalaris chorioideæ. The author

reports numerous cases in which these excrescences have nothing whatever to do with the chorioidea and have developed entirely through a proliferation of the retinal pigment epithelium.

4. PES (Turin. *A. f. O.*, vol. lix, 3, November, 1904) also writes upon this subject, emphasizing the same point, and classifies these verrucæ into the following types, viz.:

(a) Hyalin wart-like proliferations coming from overgrown and degenerated retinal pigment epithelium.

(b) Fibrin coagula thrown out between the retina and chorioidea in inflammation.

(c) Larger papillary bodies or crenations, or folds of the inner surface of the chorioidea occurring in inflammation of this tunic.

(d) In the last stages of atrophy and sclerosis these folds take on a stratification due to the arrangement of the chorioidal vessels.

(e) In extensive detachment of the chorioidea the folds may eventually simulate huge papillæ.

Dr. Brown showed a specimen with numerous typical so-called verrucæ of the chorioidea which come entirely from the retinal pigment epithelium, and cover an intact basalar membrane.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

The regular meeting of this society was held in the rooms of the Chicago Medical Society, Nov. 21, 1904, at 8 o'clock.

Dr. Oscar Dodd in the chair.

Dr. W. H. Wilder read a report of (a) A Case of Chronic Glaucoma Unsuccessfully treated by Sympathectomy; (b) Removal of Orbital Tumor. Dermoid. He also presented a case of extreme convergent strabismus.

Dr. Mortimer Frank presented for Dr. C. D. Wescott a case of recovery following an injury to the eyeball, the sclera having been cut by the explosion of a lubricating glass of a steam engine. The wound was irregular, but had healed, leaving a smooth scar.

Discussing these cases, Dr. W. E. Gamble referred to the operation of exsection of the rectus muscle as advocated by Dr. A. E. Prince for the relief of convergence of paralytic origin, and stated that in his experience it had been entirely satisfactory. Dr. W. H. Peck referred to a case of orbital dermoid he had seen and removed, located just below the superior margin of the orbit. It had been observed by the patient shortly after an injury, and was slowly

increasing in size. The sensation on palpation was that of a foreign body moving beneath the finger, but pathologically it was demonstrated after removal to be a dermoid.

Dr. F. A. Phillips related a case of dermoid located in the superior nasal angle of the orbit, dipping deeply between the superior and internal recti. It extended into the orbit about one inch, was filled by sebaceous material and many fine hairs. No recurrence has taken place after a period of two years.

Dr. J. B. Loring called attention to the fact that the patient exhibited (operated on by Dr. Wilder for orbital tumor) had complained neither before nor after operation of any diplopia, notwithstanding the marked displacement of the globe and its sudden reposition. In reference to the study of squint and its correction, this is of extreme interest.

Dr. Peck stated he had seen the case of extreme convergence some seven years ago, when an attempt, only partially successful, was made to correct the defect in one eye.

Discussing the case of injury exhibited by Dr. Frank, a case was related by Dr. Oscar Dodd in which the sclera was cut at least half an inch, but, unlike the case exhibited here, healed with a marked bulging. A high degree of astigmatism was found to be present after healing, but as no previous examination had been made, it could not be stated whether the astigmatism was the result of the injury or not.

Dr. J. B. Loring presented two cases of interstitial keratitis in acquired syphilis, adenopathy typical in both cases.

CASE 1.—Female, 39 years old, had many cicatrices in the neck from old glandular trouble in childhood, which would suggest the idea of tuberculosis, especially as the patient's father died of acute tuberculosis of one year's duration. She was first seen three months previous, with a marked inflammation of the episcleral tissue of the right eye, involving the upper and outer portions. Cornea not affected. Mild chlorid was given; patient was not seen for some time by Dr. Loring. In the interval, on account of the episcleral swelling, a rheumatic diathesis was suspected, and salicylate of soda was given in fifteen-grain doses, three times daily. When next seen by Dr. Loring the cornea had become affected; there were several foci of infiltration, and the episcleral swelling more marked. The salicylate was stopped; mercury and iodid pushed, the mercury to saturation, the iodid to 180 grains daily. The episcleral swelling soon disappeared and the cornea improved.

CASE 2.—Man, 25 years old, had the acquired disease when 13 years of age, and was treated for two years and told he need have

no fear of further trouble. When first seen the eye had been affected for twelve or thirteen days; a mydriatic used and the pupil well dilated. There was an extensive central infiltration deep in the substance of the cornea, and numerous small, punctate deposits about it. Attention was called to these cases as being representative of the disease in the acquired form, illustrating the primary and secondary types, the corneal infiltrate, the limitation of the disease to one eye, and the more rapid improvement under treatment.

Dr. Nelson M. Black read a report of comparative tests of roundels from an ophthalmologist's standpoint. The essayist presented considerable data concerning the quality of glass used by manufacturers of railroad signals, the necessity for the careful placing of such signals with regard to foreground and background; also the better illumination obtained by the use of a good quality of oil burned in the lamp. He called attention to the false economy practiced by the roads making use of inferior material for this purpose.

F. A. PHILLIPS, Sec'y.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting, December 20, 1904.

Dr. S. D. Risley, Chairman, presiding.

BINASAL HEMIANOPSIA.

Dr. William T. Shoemaker reported a case of neuritic optic atrophy with binasal hemianopic fields, in a man, aged 65 years, treated in the Eye Dispensary of the Presbyterian Hospital, June, 1904. Vision, O. S., began to fail eight or nine years ago. Disturbance described as a central blur; no progress until three months ago, when black film was noticed before O. D., with gradual diminution of vision. O. D., $V=1/80$, eccentric fixation, not improved; O. S., $V=1/30$, not improved. The pupils are equal, the irides sluggishly active to light, the hemianopic pupillary reflex imperfectly present, and the discs "filled in" and atrophic, fluffy in appearance, with margins somewhat blurred. The left field is nasal hemianopic, over-shot about 5° , with line of demarcation well defined, and macular region preserved. Field for red is correspondingly cut. The right field, also nasal hemianopic, shows a large central scotoma, which is not absolute. Field is over-shot a few degrees near center, and color is not recognized. Medically the case is one of pronounced, diffuse, cardiac and arterial sclerosis; oph-

thaimologically it is one of optic atrophy, following or attended in its course by a low-grade optic neuritis.

Dr. Shoemaker believes that binasal hemianopsia as a diagnostic term is in most cases a purely symptomatic one, and as such should be discarded, and is in accord with those who regard it as generally a symptom of optic nerve disease. The investigations of Henschen have shown that the uncrossed fibers are everywhere mixed with the crossed and crossing fibers in the optic chiasm. Nasal hemianopsia due to a chiasm lesion is, from this arrangement, therefore impossible. The fibers in the tract are shown to be unmixed, so that nasal hemianopsia from a tract lesion is possible. The most probable lesion here which would produce it would be an atrophy of the uncrossed bundle, which might be called a selective atrophy. Degeneration of the visual fibers has not been carried with certainty beyond the external geniculate body, therefore the possibilities of a lesion situated between this point and the cortical visual center are purely speculative.

Nineteen cases thus far reported, including his own, were reviewed with reference to the optic nerve condition as ophthalmoscopically found or demonstrated postmortem. In twelve cases, or 63 per cent., inflammatory disease of the optic nerve was demonstrable. Classing with these, two cases of probable fracture, with optic nerve injury, the percentage of cases exhibiting binasal hemianopsia of probable optic nerve origin is 73.6. So far as known, five cases seem to be of central origin, one of which was possibly psychic.

Dr. Shoemaker believed that the destruction of the uncrossed fibers in the optic nerve without serious or immediate destruction of other fibers, could probably be best accounted for by the profusion and arrangement of the septa, or pial processes, which enter the nerve, especially in its intracranial portion. Inflammation traveling along these septa, limited to, commencing in, or more intense in those processes surrounding the uncrossed fibers, is not at all too unthinkable to have occurred twelve times. Interstitial inflammation has a well-known tendency toward symmetry. These septa have been shown by Wilbrand and Sanger to be definite, and not haphazard; they are most marked in the intracranial section of the nerve, and are almost absent in the tract.

Discussion.—Dr. Spiller said that an intracranial lesion on the outer side of each optic nerve near the chiasm might cause binasal hemianopsia. It is at present doubtful whether a lesion on each side of the chiasm could cause binasal hemianopsia or not, because the crossed and uncrossed fibers seem to be mingled here, and yet

von Monakow regards the fibers at the lateral portion of the chiasm as chiefly uncrossed. If Henschen's description of the fibers in the optic tracts is accepted, lesions of this part of the visual system might cause binasal hemianopsia. It is very doubtful whether lesions above the primary visual centers (external geniculate body, pulvinar of the optic thalamus, anterior colliculus of the corpora quadrigemina) could cause binasal hemianopsia. Harris, in a study on hemianopsia, has expressed the opinion that a loss of the lower quadrant of the visual field of one eye and of the upper quadrant of the field of the other might occur from a lesion in each occipital lobe. It is hard to understand how this could occur. Henschen believes that the upper portion of the retina is represented in the upper lip of the calcarine fissure, the middle portion of the retina in the depth of the calcarine fissure, and the lower portion of the retina in the lower lip of the calcarine fissure. The case recently reported by Beevor and Collier gives support to Henschen's views, except it shows that the lower portion of the retina may be represented also in the upper lip of the calcarine fissure. If, therefore, the fibers in connection with the upper part of the retina, and those in connection with the lower part of the retina remain separate throughout the optic radiations, and are represented in distinct portions of the visual cortex, it is conceivable that the fibers from the temporal side of the retina may have a separate representation in the visual cortex. It is therefore possible, although not proven, that a lesion in the outer part of each calcarine fissure, near the occipital point, might cause binasal hemianopsia.

Dr. de Schweinitz described a case of so-called binasal hemianopsia with marked contraction of the preserved temporal fields, especially on the left side. The clinical history was as follows: A man, aged 55 years, was examined Nov. 11, 1891. V., O. D.=6/20; O. S.=fingers at 60 cm. The right pupil measured 4 mm., the left 3 mm. The light reaction was lost; both pupils reacted actively in accommodation and convergence. There was slight divergence of the left eye, but the rotations of the eye were normal. Diplopia could not be elicited, but there was a history of double vision. The nerve head of the right eye was atrophic and of a gray-green color. The veins in contrast to the arteries were distended and dark colored. There were no retinal lesions and no evidence of previous active neuritis. The ophthalmoscopic changes in the left eye were exactly similar, save only that the disc was more atrophic than the one in the right eye. The preserved fields (temporal) were much contracted, especially that of the left side. There was complete loss of both nasal fields, the dividing line touch-

ing the fixation point, which on the right side, however, was still within the seeing field. Up to eight months prior to his examination the patient's vision was unaffected. Then he had pneumonia, and immediately afterward sight grew dim, it being misty, like a fog. There was pain in and over the eyes, and this failure of vision had continued until he reported for treatment. He had fever and ague ten years before and again two years prior to his visit. The patient had three healthy children. He denied syphilis. He had not smoked for six months and was not a drinker. The knee-jerks and station were normal. General examination was negative in results. There was no improvement after a month of treatment, mercury and strychnia. Since then he has not been seen and his subsequent history is unknown. To whatever cause the optic nerve atrophy should be attributed, the attack of pneumonia, an undiscovered toxemia, or a denied infection, the binasal hemianopic fields could not be ascribed to a chiasm lesion. They evidently represent a special localization of the atrophic process in the optic nerves, that is, one affecting only or especially the temporal fibers.

Dr. Veasey referred to the case of binasal hemianopsia which he reported before the Section in January, 1897, and also gave the history of a case, at present under observation, in a married woman, aged 31 years. About four and one-half years ago, after a hard day's work in the field on a very hot day, there appeared paroxysms of temporal headache, extending to the vertex, which were always worse in the afternoons. In a few weeks nausea and vomiting occurred, independent of meals, and continued for two months. When first seen by him one year after the beginning of the symptoms there was optic nerve atrophy, with former neuritis, and in each macular region a stellate-shaped figure of whitish exudate. The nasal half of each visual field was lost. Under large doses of potassium iodid, mercury, strychnin and nitroglycerin, all subjective symptoms disappeared and the patient is in perfect health, though with poor vision and complete loss of the nasal fields.

RECURRENT OCULOMOTOR PALSY.

Drs. William G. Spiller and Wm. Campbell Posey, after referring to the few cases of recurrent oculomotor palsy described in American literature, reported the following case: A physician, aged 31, when about 15 years old and during some years later, had attacks in which he became so completely blind that he could not recognize an object on the other side of the room, although he could see light faintly. These attacks lasted about half an hour, and were followed by severe headache. During the blindness the patient saw flashes

of light. The blindness disappeared before the headache developed. These attacks had not occurred during the past ten years. A sister of the patient had migraine. Venereal disease was denied. Five years ago the patient had recurrent attacks of pain in and over the right eye, but nothing abnormal in the eye-grounds or in the extra-ocular muscles was noticed at that time. In January, 1904, he had his first attack of diplopia, following an attack of pain in the right eye. The double vision was more marked when he looked to the left and above, but he did not have ptosis. This diplopia persisted several weeks and gradually passed away, leaving no apparent ocular disturbance. In July, 1904, the diplopia returned. The double images were of much the same character as in the preceding attack, but in addition the upper lid of the right eye drooped. At first the ptosis was intermittent, but in the course of a few weeks it became permanent and almost complete; until November 1, when the lid was raised for several days, but dropped again, and the eye remained closed until November 24. At this time the lid again was raised and resumed its natural appearance, and so remained one week, when it began to partially droop, in which condition it still remains. When he was examined on Oct. 31, 1904, the right inferior oblique and the right internal rectus muscles were paretic. The muscles of the left eye have never been affected, and the irides and ciliary muscles of each eye have been normal. The man had no other symptoms of disease of the nervous system.

The authors described the symptom-complex of recurrent oculomotor palsy as understood by Möbius, and acknowledged that according to this narrow definition their case could not be recognized as belonging to the type of Möbius, and yet it harmonized very well with the symptom-complex as given by Oppenheim. As only four cases with necropsy have been reported, and in all a lesion of the oculomotor nerve has been found, it seems unwise to make an arbitrary symptom-complex and reject all cases that vary from this standard.

Discussion.—Dr. de Schweinitz briefly referred to the case of recurrent oculomotor palsy which he had reported before the American Ophthalmological Society in 1895. Right oculomotor palsy began at the age of 11½ years; recovery in six weeks; frequent recurrence of the ocular palsy, associated with severe neuralgia followed by complete recovery of the paralyzed muscles during the intervals, until about the patient's fourth year, when divergence became stationary, but the ptosis successively recurred and disappeared as heretofore; finally, permanent ptosis at the twenty-eighth year, after the most violent attack of pain of the whole series. At

the present time the appearances are those of complete permanent right oculomotor palsy. Other nerves were not involved, for example, the abducens, facial or trifacial. The neuralgic attack was as follows: Preceded by a dizziness, a full feeling of the head, swelling of the periorbital tissues and distension of the cutaneous veins, the pain began in the right eye and traveled around the right side of the head to the occiput, where it finally settled and remained until the subsidence of the nerve storm. Immediately following the onset of the pain there was vomiting, which lasted from twelve to twenty-four hours, and left the patient utterly dejected and exhausted.

Dr. Carpenter stated that he was treating a woman, aged 51 years, in whom the palsy involved the sixth nerve with the third. The attacks were preceded by migraine. She presented a neurotic history, but otherwise there was nothing in etiology to account for the affection.

EXTIRPATION OF THE LACHRYMAL SAC.

Drs. G. E. de Schweinitz and C. M. Hosmer, after a brief review of the history of the operation of extirpation of the lachrymal sac, and the various methods of operating, strongly advocated this operation when, in the presence of chronic dacryocystitis, ordinary conservative surgical measures fail, when the patient can not or will not devote sufficient time to treatment, when there is an impassable stricture, when an operation on the eyeball is speedily necessary, when there is a serpiginous ulcer of the cornea, in insane patients, and in those patients who are liable by virtue of their occupation to corneal injuries and therefore to corneal ulceration. In their experience the results of the operation were uniformly successful, and there was prompt relief of the annoying symptoms occasioned by the epiphora and purulent discharge through the canaliculi. No complications of serious import had occurred, although at times the hemorrhage had been annoying. They had not found it necessary to employ any of the means which have been advocated for outlining the sac, for example, injecting it with paraffin.

A number of sections illustrative of the pathologic conditions found in the excised sac were exhibited. In general terms the findings were these: Some alterations in the epithelium, either in the form of erosions and degenerations or of an alteration of the stratified columnar epithelium, the strata of epithelium being reduced in number and the cells approaching a cuboid type; dense infiltration of the mucosa with lymphoid elements and polynuclear leucocytes; infiltration of the fibrous tissue with leucocytes and embryonic connective-tissue corpuscles; injection of the blood ves-

sels and occasionally peri-vascular collections of embryonic connective tissue. In some sections the lymph spaces of the fibrous coats showed thickening and proliferation of their endothelium. In no instance had caries of the lachrymal bone been found. The authors questioned the value of putting patients through weeks and often months of uncomfortable treatment, when a simple operation, which may be done under local or general anesthesia, in the majority of instances, permanently relieves them of their trouble.

Discussion.—Dr. Zentmayer said that he had performed the operation but a few times, and in one case, where there was necrosed bone, suppuration continued for a time. The excellent results secured by Dr. de Schweinitz, he thought, might have been in part due to the fact that most of the patients were adults, as in a recent report of 170 extirpations performed at Tübingen there were 65 per cent. of unsatisfactory results in those performed in the first decade of life. Dr. Posey stated that he had operated a number of times during the past two years, practicing the method of Holmes. He had always been able to dissect the sac from under the internal ligament without cutting it. Hemorrhage was a disagreeable complication in a number of cases. He had not found it necessary to obliterate the canaliculi nor to curette the lachrymal duct. Healing in every case was by first intention, save one, where there was considerable necrosis and sinus resulting. Dr. de Schweinitz, replying to Dr. Zentmayer, stated that all of the cases upon which he had operated had been adults over the age of 25, with the exception of four, these being children. Confirming Dr. Zentmayer's observation, he might say that the only case in which there had been some delay in healing of the wound had occurred in a child. This child also had sinus disease. He reiterated his belief that the operation was of great value, and always indicated under the circumstances which had been detailed in the paper.

SARCOMA OF THE ORBIT.

Dr. G. Oram Ring exhibited a child, aged 6 years, from whose left orbit he had removed such a growth two months previously. The case had been examined by six surgeons, all of whom had advised operative interference. The right eye and orbital tissues were in all respects normal. The interior as well as the exterior of the left eye showed engorgement of the venous channels. Exophthalmos was pronounced, the added displacement being downward and outward. A solid nodular growth extended from inner to the outer margin under the orbital roof and well down to floor.

Marked stretching and discoloration of the lids were present. Preauricular and cervical glands were not involved. Fluctuation and pulsation were absent. Accessory sinuses were unaffected. Dr. Deaver had ligated the left common carotid without appreciable diminution of the exophthalmos. After an exploratory incision had been made to render certain the diagnosis and to determine more accurately the ramification of the growth, the eye was enucleated and the tumor removed without orbital evisceration. The outer canthus was restored, and the orbit packed with iodoform gauze, moistened with sterile unguentum petrolatum. The position of the growth was such as to render the Krönlein method inadvisable. The tumor proved to be a round-cell non-pigmented sarcoma which involved the connective tissue of the orbit.

The methods of treatment considered were removal of the growth, complete orbital evisceration, x-ray therapy, and finally destruction of the growth by so-called electrochemical sterilization. The following conclusions seem warranted from a study of these methods: 1. The difficulty in accurate diagnosis under certain conditions entirely justifies an exploratory incision with removal of a section of growth for microscopic study, said exploration likewise serving to determine the ramification of the tumor. 2. The brilliant results achieved by a number of accurate observers in the field of Röntgen therapy justify the immediate tentative application of the method before any radical operation is attempted. If unsuccessful in removal of the growth its virulence will probably be decreased and the dangers of metastasis lessened. (Leonard.) 3. If the sarcoma is encapsulated operative intervention without orbital evisceration promises a successful outcome. 4. In view of the almost constant recurrences after orbital evisceration, the removal of the growth itself is regarded as sufficient unless the periosteum or bony wall is involved. 5. The encouraging results reported from the cataphoric sterilization of malignant growths in other parts of the body seem to warrant the utilization of this method in the orbit, due care being exercised as to strength of current used. (Massey.) 6. Future experience must determine whether better results will be achieved by using this method for the original growth or reserving it for recurrence in loco. 7. If operation has been performed and the growth has recurred we have at command these two valuable methods of attack.

Discussion.—Upon invitation, Drs. Leonard, Kassabian and Massey spoke of the value of electricity in the treatment of orbital growths. Dr. Massey believed that cataphoresis would destroy and sterilize the diseased tissue with moderate current. Dr. Leon-

ard said that since recurrence after operation is the rule in the majority of instances, he thought the *x*-rays should be employed in every instance. Dr. Kassabian also advocated *x*-ray treatment, applied as soon as the disease is recognized.

THE OPHTHALMIC SUBJECTS TREATED OF IN THE CODE OF
HAMMURABI.

Dr. Charles A. Oliver read this paper. He explained that he had gathered together into a brief and connected form some of the ophthalmic data mentioned in Professor Harper's recent transliteration and translation of "The Code of Hammurabi, King of Babylon, about 2250 B. C.," in order that the interesting and valuable laws pertaining to the eye therein contained might be made accessible to those ophthalmologists who were unable to study them in the original work.

After stating the condition of the times, the necessities for the codification, and the relationships between the various grades of peoples, he quoted the peculiarities and drasticity of punishment for misdemeanor in which the eyes were involved, the laws of retaliation where eyes were accidentally or purposely lost, and the comparative economic values of the eyes of the two upper classes of freemen, slaves and oxen.

As a few of several important conclusions, he emphasized the facts of the great value set upon the skill of the ophthalmologists of that day, since the surgeon operating upon an eye received the same honorarium for the saving of that organ as for the saving of a life; the honor in which the faithful physician was then held; and the proof that even at that time stringent laws against quackery were necessary.

CONGENITAL DEFECT OF ABDUCTION ASSOCIATED WITH RETRACTION
OF THE EYEBALL.

Dr. John T. Carpenter reported a case occurring in a woman, aged 40, who had suffered severely from headaches, diplopia and reflex nervous disorders. The left eye shows entire loss of outward rotation, defective convergence, enophthalmos, and slight narrowing of the fissure of the lids. On attempts to look toward the left, the eye came forward, the enophthalmos disappeared, but no outward rotation occurred. On looking toward the right the left eye became retracted and failed to follow the movements of the right eye. In the primary position there was slight convergent squint, with homonymous diplopia. The eyes were always emmetropic, and visual acuity normal. Treatment should be undertaken only for cosmetic purposes, and in most of the reported cases division of

the fibrous and unyielding external rectus had been productive of fairly good results.

Discussion.—Dr. de Schweinitz gave the history of a man, aged 30, with normal eyegrounds, full visual acuity with correction, and 5° of esophoria and 9° of right hypertropia.

There were typical retraction movements of the right eye, with paresis of the right external rectus. The affected or right eye sinks in a number of millimeters (the exact measurement was not made) and slightly up, and the lids half close, reducing the normal width of the palpebral fissure fully 50 per cent., when adduction is attempted or on movement up and in and down and in. In the right field there is homonymous diplopia, which disappears gradually as the test-object is moved to the center and reaches slightly to the left of the center of the field. When the object is moved to the left lower field, there is vertical diplopia, the right image being lower and to the left of the left image. These measurements were the same whether the patient looked through the correcting glasses or without them.

WILLIAM M. SWEET, M.D., *Clerk of Section.*

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting in Colorado Springs Dec. 17, 1904.

Dr. Friedmann, Chairman, presiding.

Dr. Neepor presented cases and submitted the following report:

INTERSTITIAL CORNEAL OPACITIES.

S. T. C., male, age 36, ranchman, interstitial opacities, right cornea. First seen Aug. 30, 1904. Family and personal history unusually good. Was partially snow blind February, 1903. During October, 1903, patient first noticed a column of white lines of raised tissue on sclera, right eye, slightly above inferior fornix, running horizontally from canthus to canthus, being most conspicuous at superior border and gradually lessened toward inferior fornix. At no time has the eye been inflamed or painful. This column of lines gradually moved upward, maintaining its original relative position and finally disappearing toward superior fornix. Patient thinks it reached inferior corneal limbus in about four weeks and encroached on pupillary space in another four weeks. No unusual sensations were produced while passing through cornea except lowered vision. The sclera became normal in few weeks after lines had passed to a higher position, but the cornea has continued to have numerous dense opacities almost milk white and somewhat resembling bubbles connected by spaces which are less dense. Patient feels certain that

the more dense parts have shifted positions from day to day during past two months. Certainly the numerous opacities are less diffused and form more nearly a compact mass than they did Aug. 30, 1904.

O. D. V.=fingers 6 ft. O. S. V.=20/15+.

Discussion.—Dr. Black: An interesting feature of this case is the peculiar color of interstitial deposit, not unlike that of lime salts.

Dr. Patterson: If of lime salts, there would be more symptoms of irritation.

CONICAL CORNEA—MARKED IMPROVEMENT IN VISION.

W. T., male, age 21. Case shown at this society Dec. 19, 1903, at which time O. D. V.=4/200. O. S. V.=2/200, the apex of the cone, left eye, being opaque. Strong minus lens would improve O. D. V. but slightly, and no lens would improve O. S. V. perceptibly. On May 8, 1904, electrocautery was applied, left cornea 11½ mm. external to apex of cone in vertical position involving tissue about 4 mm. long and 2 mm. wide at extremities and somewhat wider centrally, care being taken to burn deep as possible without perforating the cornea. My object in burning to side of the apex rather than the apex itself was to avoid central macula and if possible to draw the existing opaque apex from the central position. On July 30, 1904, O. D. V. remained unchanged. O. S. V.=20/200, and the cautery was again applied in similar manner excepting that it was applied more freely at extremities, where there was the lesser cicatrix from former cauterization. At this time (Dec. 17, 1904) O. D. V.=4/200 and O. S. V. with —8.00 D sph. \subset 8.00 D. cyl. ax. 180=20/60+. O. S. V. without correction=15/200.

Discussion.—Dr. Black advised against iridectomy. Operating on the right eye may not produce diplopia, but might increase the vision of that eye. He would insist on wearing as perfect a correction by lenses as is possible as preventive of further increase.

Dr. Patterson thinks result excellent, but feels that the case will lose some of the vision obtained. If the experience of most of these cases is repeated, he would wait before operating further.

Dr. Friedmann: A case of 20/100 vision refracted himself at home and with 17c. 180° obtained vision of 20/20.

VITREOUS OPACITIES.

W. B. D., male, age 28, barber; vitreous opacities. First seen Sept. 4, 1904, for scotoma, left central field. Father has chronic stomach trouble. Mother and ten other children healthy. Patient has always had small fistula bridge of nose. Has had ulcers of throat, some rheumatism and is constipated. Had cystitis five years ago result of gonorrhea. Glands normal. In normal O. D. V.=

20, 20. O. S. V.=2 200. During past year has had central scotoma, left, three times and right twice. Attacks come on during the night by complete blindness in the affected eye, gradually clearing from periphery until vision normal. First attack lasted 2 or 3 weeks, and each attack since this attack, about June 1, has lasted longer than its predecessor. Ophthalmoscope shows left vitreous body almost uniformly hazy, being possibly less dense at periphery. At one time since September 14 right vitreous became quite hazy, but cleared up readily. Attacks usually followed excessive smoking. November 10 smoked five strong cigars. November 11 O. S. V. nil. December 4 apparent remnants of hemorrhage well back in vitreous about as it appears to-night. Patient has gained 18 pounds on tonic treatment. Will not tolerate iodid potassium or sodium.

INJURIOUS EFFECTS OF ABSORPTION TREATMENT FOR CATARRH.

J. S., male, ranchman, age 71. Senile cataract right eye, left eye having vision fingers 2+ feet after cataract operation by competent oculist (now deceased) 8 years ago. Until 2 months ago had used an advertised absorption treatment in right eye for 1 year. Patient did not progress well under the treatment given him during first part of year, after which time he was given the No. 100, which was described as their most powerful absorbent. It distressed patient greatly and undoubtedly possessed caustic properties, for, while he gives history of former normal appendages, there is now evident 1 D. V. symblepharon, including lower half of corneoscleral margin and extending to inferior fornix, obliterating inferior cul-de-sac; 2nd, ectropion and thickening of lower lid, and 3rd, complete stricture of lower canaliculus.

Dr. A. C. H. Friedmann reported a case of subhyaloid hemorrhage in left eye occurring in a man 52 years of age. One hemorrhage covered the papilla, while two others were directly about and each about double the size of the papilla. Hemorrhage scattered over fundus and small thrombi formed at the bifurcation of the vessels. Absorption took place readily. The whole vitreous became filled with the products of the hemorrhages, especially above. No papilla visible. Whitish gray masses on the subhyaloid space resembling a detached retina. In spite of these features V.= Sn. 1.

Discussion.—Dr. Black thinks the vitreous changes are the result of the subhyaloid hemorrhages, and they will eventually clear up. The KI should be stopped for a while and mercurial inunctions substituted or given alternately.

Dr. Patterson believes the hemorrhage will clear up. Altitude

may be an etiologic factor, in view of the low blood pressure. There is, however, danger of subsequent hemorrhages.

Dr. Coover: High frequency current with KI hastens absorption. He can not explain its effect. Cases of hemorrhage of the retina from trauma clear up rapidly under this treatment.

Dr. Neeper believes in crowding the KI to establish a tolerance and alternate with mercury.

Dr. Boyd would use KI and hydrarg, combined.

Dr. Friedmann believes, where the history is uncertain, we are justified in treating specifically. It can not hurt and may do good.

Dr. Friedmann also reported this case in a woman:

GRAVE'S DISEASE—OPTIC-NERVE ATROPHY.

Mrs. J. R. P., aged 50, who has suffered from intense headaches for the last ten years. They come in spells and last from 5 hours to 3 days. The time of appearance is usually shortly before or shortly after menstruation. There is a laceration of the cervix, a retroversion and retroflexion of the uterus and a little tumor on the left ovary. She had Grave's disease 4 years ago, with an enormous amount of exophthalmus, and her neck was huge. Tachycardia was also observed and pulsations all over the extremities. She was cured of this after a year's illness, and her headaches, which had almost ceased during the period of goiter, returned in much severer form afterward. V. R. 5/10, V. L. 5/4. Both optic nerves are white and atrophic. The right one more than the left, which shows only a marked paleness on the temporal side. Is the optic atrophy a consequence of Basedow's disease or is there one cause which explains both? Is the atrophy consecutive to Basedow's disease?

Discussion.—Dr. Black: If the vision was normal one or two years after cure of Basedow's disease, the atrophy was not due to it.

Dr. Boyd: If the atrophy is progressive, it is due to former Basedow's disease; if not progressive, then not due to Basedow's disease.

Dr. Friedmann also reported a case of optic nerve atrophy in a man, 57 years old.

Dr. Jackson reported the case of a girl, aged 12, having a compound myopic astigmatism which required $-3\frac{1}{2}$ cyl. axis 5° for its correction. During some months she had gone without her correcting lenses and learned to improve her vision by placing her finger near the outer canthus and making traction upon the lids. Photographs were exhibited to show the maneuver. It did not seem to give much stenopæic effect, but the tension caused an actual flattening of the cornea, which improved her vision without lenses from 4/30 to 4/8. With correcting lenses vision was 4/4.

WILLIAM C. BANE, Secretary.

Notes and News.

PROF. H. H. SATTLER of Leipzig celebrated his 60th birthday on September 9.

A RECENT death is that of Dr. Joaquin X. Perlira da Cunha, professor of ophthalmology in the medical faculty of the University of Rio Janeiro.

COUNT JOHN MAGAWLEY, formerly director and surgeon-in-chief of the St. Petersburg Institute for Diseases of the Eye, is dead, aged 73 years.

It is the desire of Dr. Melville Black that we should announce that two errors, caused by the printers, occurred in his editorial, "The New Ophthalmology," published in the December issue. The word "refractory" was used instead of refraction, and in the last paragraph instrument cabinet should have been used instead of "refraction cabinet."

MANHATTAN EYE AND EAR HOSPITAL.—The plans have been filed for the new building of the Manhattan Eye, Ear and Throat Hospital, which is to be erected in East Sixty-third street. The building will be twelve stories high, will accommodate about four hundred ward patients and fifty private patients. A feature of this hospital is its postgraduate department.—*Jour. A. M. A.*

HIRSCHBERG'S ANNIVERSARY.—Prof. J. Hirschberg of Berlin, the well-known ophthalmologist, recently received a *Festschrift* from his friends and pupils on the twenty-fifth anniversary of his professorship. It contains a number of works by prominent ophthalmologists of various countries. One of the cabinet ministers and delegates from a number of scientific societies were present at the ceremony of presentation.—*Jour. A. M. A.*

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, MARCH, 1905. VOL XIV. NO. 3. NEW SERIES

Original Articles.

CONCERNING THE RELATIONSHIP OF NASAL DISORDERS TO VITREOUS OPACITIES.

JAMES ALLEN PATTERSON, M.D.

COLORADO SPRINGS, COLO.

(Illustrated.)

My gleanings from literature lead me to believe that there is an element of obscurity regarding the cause of all cases of vitreous opacities, for why should some eyes show this change when other eyes having the same refractive errors and used under equally fatiguing conditions as regards the close point fail to present evidences of it?

The causative results of high myopia, with its consequent choroidal congestions, does not cover all cases; neither does the ill results of uncorrected or improperly corrected refractive errors.

Hill Griffith¹ states that "the nutrition of the vitreous is dependent upon the vessels of the ciliary body and to a lesser extent upon the retina, but no vessels enter its substance." He says: "Concerning vitreous opacities, their presence depends upon the coincident implication of the retina rather than upon the choroiditis itself, and they are found only when the retinitis is more marked than usual and the inner layers are affected as shown by opacity of the retina and blurring of its vessels." When considering choroiditis, he writes, "apart from trauma, the disease is brought about by micro-organisms conveyed to the eye from within the body by the circulation of the blood, and these organisms must be arrested and adhere to the walls of the vessels before they can cause damage." He enumerates as causes syphilis, gonorrhea, rheumatism, blood, nutritional and infectious disorders. "As vitreous opacities do frequently occur from visible choroidal changes, it is only fair to assume that some, at least, of the apparently simple cases may be due

1. Griffith, A. Hill: **System of Diseases of the Eye**, Norris & Oliver, vol. III.

to similar changes too far forward to be recognized." This, taken into consideration with the fact that most of these cases in the early stages present opacities as a haze floating or anchored in the anterior part of the humor, makes it probable that the disease is primarily at the ciliary body or its adjoining membranes.

Studying further the production of vitreous opacities, I beg to quote from the paper on "Study of Inflammatory Exudates into the Vitreous," read at the meeting of the Oph. Soc. of the United Kingdom, June 13, 1901, by Leslie Buchanan.² "In the course of his remarks he said that the exudate into the vitreous in cyclitis is, in the first instance, formed in the pars ciliaris retinae, and more especially in the non-folded portion of it, but soon the folded portion, the fibrous stroma of the ciliary body, and the retina take part in the production of the inflammatory exudate. The exudate into the vitreous body is seen in the fresh specimen in 5 per cent. formalin as opaque, white, flocculent masses. It may be divided into zones, which from the ciliary body inward are as follows, viz., (1) a fibrous zone, (2) a fibrinous zone, (3) a fibrinocellular zone.

"The formation of fibrous tissue begins very early, probably about the eighth day. The formation of fibrous tissue is accomplished by the action of certain oval nuclei on the fibrin, ending in the formation of fibrous tissue. The cells which form the exudate at first form masses on the non-pigmented layers of the pars ciliaris retinae and are of various characters. That these cells are not all derived from the endothelium is shown by bleaching and restaining, when many cells may be seen migrating through the pigment layer to the free surface. In the retina also there is evidence of migration. The cells thus exuded pass to a greater or less depth into the vitreous. Here they proliferate rapidly. In the more superficial portions of the exudate degenerated protoplasm may be seen not having a nucleus, though no instance of mitosis has been seen. Fatty degeneration follows and further migration of nuclei takes place, these finding their way back by the lymphatics.

"A fibrinous cyclitic membrane is thus left infiltrated with fat and highly vascular. The fat is absorbed, the blood vessels are gradually constricted, leaving a comparatively vascular fibrous-tissue layer. . . . A further change is the formation of true bone."

How much a factor osmic disturbances may be I am unable to determine. The experiments of Brown Pusey³ certainly open a large field of conjecture, which borne in mind in our investigations may

2. Buchanan, Leslie: *Arch. of Ophthalmol.*, vol. xxxi, No. 1, p. 45.

3. Pusey, Brown: *Osmic Disturbances as Cause of Glaucoma, etc.*, Transactions Chicago Pathological Society, vol. vi, No. 2.

serve as a pathfinder. Seemingly when the nutrition of the vitreous becomes disturbed and its fluidity becomes greater it should be more vulnerable to osmic influences.

Heine⁴ of Marburg, making contributions to the anatomy of the myopic eye, found that "the ciliary muscle of myopic eyes may have a form generally supposed to be found only in the hyperopic." "As regards the vitreous of highly myopic eyes I found at the posterior pole cavities in its substance." He also found "that changes about the macula are not due to inflammatory processes in the choroid, but principally depend upon alterations in the pigment layer of the retina."

Pursuing further the anatomy, particularly as regards the relationship of the nose and eye, let me quote Mendel,⁵ who states that "the ophthalmic artery gives off the anterior ethmoid artery which supplies the side of the nose and the anterior portion of the septum, and a direct branch passes from the eye along the nasal duct." "The veins of the nasal mucosa are connected through the lacrymal plexus with the ophthalmic veins." This anatomical assertion made me think it was possible for pathologic conditions of the middle meatus of the nose to be a factor in producing some inflammatory conditions of the eye.

Broeckert⁶ mentions the researches of Berger, Holmes, De Laperousse, and quotes Ziem's theory of the pathogeny of the "microbic metastasis by way of the blood vessels." He reports one case of vitreous opacities and retinal detachment following ethmoido-frontal sinusitis, inquiring whether his case is a "simple coincidence or, indeed, a relation of cause and effect between these two affections?"

A. Onodi⁷ aptly remarks: "I have discovered and described one semi-canal leading to the ethmoid cells, the semi-canal is ethmoidealis, which anomaly I consider important in the spread of inflammation, as also in the origin of direct thrombophlebitis and circulatory defect. This semi-canal, of varying length, extends from the foramen ethmoidale anterius to the anterior cranial on the wall of the frontal sinus or the orbital cells, namely, the ethmoid fossa cell situated in the roof of the orbit. The arteria ethmoidalis anterior

4. Heine, L.: Contributions to the Anatomy of the Myopic Eye, *Arch. of Ophthalmol.*, vol. xxxi, No. 6.

5. Mendel: *Arch. of Ophthalmology*, vol. xxxi, No. 1, p. 99.

6. Broeckert: Opacities of the Vitreous and Retinal Detachment Following Ethmoido Frontal Sinusitis, *Annals Otology, Rhinology and Laryngology*, vol. x, No. 1.

7. Onodi, A.: The Disturbances of Vision and Development of Blindness Induced by Disease in the Posterior Accessory Sinuses, *Journal Laryngology, Rhinology and Otology*, vol. xix, No. 12, p. 634.

runs in this semi-canal with the accompanying veins and the nervus ethmoidalis anterior.

"These structures, covered by the mucous membrane, lie free in the cavities mentioned; the mucous membrane is connected also with the orbital periosteum and the dura mater. The semi-canal ethmoidalis was noticed three times in the frontal cavity; the length varied between 5 and 8 mm. In the first orbital cell the semi-canal ethmoidalis appeared nine times; the length varied from 7 to 10 mm. In the second orbital cell the canal ethmoidalis appeared four times; length from 4 to 10 mm. In two cases with congenital fissure of the lamina papyracea a semi-canal ethmoidalis 8 to 9 mm. long was to be seen in the orbit cells. The disease may proceed along this semi-canal in both directions, cranial and orbital.

"Further, owing to the connection of the ethmoidal veins with the dural venous plexus and with the plexus ophthalmicus, circulatory defect and thrombophlebitis may be caused by the ethmoidal veins being covered by diseased mucous membrane, and may spread in the directions indicated. Those vascular cavities, with their vascular furrows leading to the orbit, which I have often found on the anterior lateral wall of the sphenoid cavity, may also play a part, not only because these vascular furrows may show physiologic fissures and consequently favor the spread, or the direct breaking through, of inflammation, but also in these ways circulatory defects may arise."

Between one and two years ago I examined the middle meatus of the nose in all those cases presenting evidences of vitreous haze and the eyes of cases of chronic affections of the nasal sinuses. I have collected for study 25 cases. Of these

Fifteen cases had vitreous opacities.

One case had vitreous haze, with retinochoroidal congestion.

Total, 16 cases.

Two cases had numerous dots upon the posterior lens capsule.

Seven cases showed no disease of the eye grounds. Small refractive errors were present, yet 3 cases did not wear glasses nor show evidence of any gross refractive error.

Of the first 18 cases the refractive errors enumerate:

Nine cases having H+AH.

Five cases, M+AM.

Three cases, AH+AM.

One case, low anisometropia, OD—0.25, OS=0.25.

Seven were over 50 years of age. The youngest case was aged 17, 2 aged 20, one 21, the others ranging between 21 and 50.

Of those having opacities and punctate areas on the posterior capsule, all excepting three had enlargement of the middle turbinate bodies encroaching on a straight or deviated nasal septum; of those three one was a patient having myopia of 6.D in one and 10.D in the other eye, and choroiditis exudativa, so that there seems sufficient evidence for the disease in the eyes of the patient without looking further.

Of the seven healthy eyes all had some abnormality or disease of the middle nasal meatus.

Two had chronic frontal sphenoid and maxillary empyema.

One had maxillary antrum empyema, cystic middle turbinal and polyps.

One had ethmoiditis, with necrosis and a very large polypus measuring 4 cm. by 2.25 cm.

The three remaining patients had slightly enlarged middle turbinal bodies, only one giving any symptoms referable to it.

Furthermore, of the 16 cases showing vitreous disease I exclude two cases of high myopia and choroiditis and two having no disease in the middle meatus. Of the remaining 12 cases, in 8 the nasal disorder was upon the right side; of this number 5 showed the vitreous disease upon the same side; 3 on both sides.

In 4 cases the nasal disorder was on the left side; of these 1 showed the eye disease on the same side, 2 on both sides, and 1 on the opposite side.

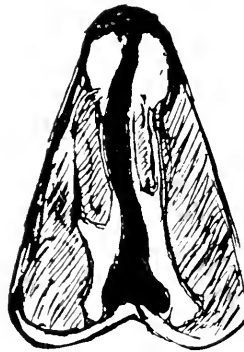
You will notice, therefore, that in these 12 cases the vitreous was affected on the same side in 6 instances, on both sides in 5 instances, and on the opposite side in only one instance.

The following case encountered the past fortnight, and not included in the above collection, is illustrative: Miss D., age 55, came complaining of pain over O. D., usually present every morning before rising and gradually lessening after rising. Complaints of wavy sensation before this eye. She had hay fever last summer in Colorado, never on the Eastern seaboard, her former home. O. D. pupil 4.5 mm., of irregular contour ovoid ax. 45. O. S. pupil 4 mm., of regular contour. Pupillary reactions to light, convergence and consensual normal. Cornea large, anterior chamber possibly shallow. T. N. in both eyes. Eye grounds normal, excepting fine translucent opacities in the anterior part of the vitreous of O. D., both floating and fixed. There is no cupping of either disc, there is in O. D. a physiologic porus only, and in O. S. a very shallow, narrow, physiologic cup. The fields, taken twice within two weeks, indicate no

disease. The patient being somewhat neurasthenic, they, in the first instance, showed a little narrowing for red and blue, but none for form in either instance. The vision = 5/5 in each, with $+0.50 \ominus -3.50$ cyl. axis 165° in right, and axis 5° in left eye.

The accompanying illustration, in which the enlarged condition of the middle turbinate on the right side is distinct, explains the symptoms and appearances.

In sleep, the recumbent posture naturally assumed provokes engorgement of the nasal tissues, which induces greater obstruction at that time, hence the pain. When the upright posture is taken there is lessening of the venous engorgement of the turbinate tissues, decreasing the stenosis, with subsidence of discomfort. The eye, however, suffers from undue absorption from undrained ethmoid secretions.



Illustrating case described.

From this study I deduce that the ordinary non-specific hyalitis is a result of a cyclitis of a low grade of activity, produced not only in myopic eyes by the systemic diseases mentioned by Hill Griffith, and in those persons in whom the refractive errors remain uncorrected, or improper glasses are being worn, particularly in the early periods of presbyopia, but that diseases of the middle meatus of the nose, in which proper drainage into the middle meatus is imperfect, are liable in some instances to be a causative factor.

My analysis is unfortunate in showing such a small number of cases, yet I am impressed by the fact that in this collection, in half the cases studied, occlusive conditions in the middle meatus of the same side have been shown, and that in only one instance was the hyalitis found upon the side opposite the nasal occlusion; yet this does not disprove the conclusion, for Onodi, in concluding the article quoted, remarks that "in bilateral slight disturbance of nasal ori-

gin the etiologic factor may be not only disease of both sides of the sphenoid cavities, but also diseases of both sides of the ethmoid cells." His "observations admit also of the possibility that in diseases of the posterior ethmoid cells of one side there may also be bilateral sight disturbance, since the above mentioned large posterior ethmoid cell may be separated by a common wall thin as paper." . . . "I have always spoken of disease of the posterior ethmoid cell on account of its close connection with the optic nerve; it is, however, known and taken as a matter of course that the posterior ethmoid cell becomes diseased with the ethmoid labyrinth or with the sphenoid cavity."

The various anomalies in the size, shape and location of the frontal, ethmoid and sphenoid cells, of which in recent years our literature has been enriched, prove that only when great anatomical anomalies occur is there much liability of the orbital contents being disturbed by grave diseases in these cavities. The cases I have recorded of purulent disease of frontal sphenoid and maxillary, in which no ocular lesions were found, demonstrate the barriers nature has built to protect the eye from invasion, and I believe the eye in these cases escaped largely owing to there being sufficient drainage present. On the other hand, there are cases in which the paths of invasion are too microscopic for demonstration upon the living subject. These are probably the ones in which the abnormalities of shape of the middle turbinate that prevent proper drainage from the cavities above give opportunity for absorption of abnormal secretions. This carried into the ocular circulation reaches the ciliary body, so susceptible to such influence.

Let me remind you that the liability to disturbances in the middle meatus is greatest in women at the menopause, although of the 16 cases of vitreous disease I have collected 7 were males and 9 females. Of the 7 males 2 had no nasal disorder, and all the females had nasal disturbance.

I believe all of us are impressed by the factor of eye strain being the prominent cause, be it from hypermetropia, myopia, astigmatism, or as the result of uncorrected presbyopia; therefore, we should sound the warning to our patients and the general practitioner in no uncertain tones. Yet the prescribing optician by *selling* any glass he *thinks* fits the case, and the presbyope who neglects glasses when he needs them, or buys any glasses he can for the moment see reading print with, and who fails to change his lenses as frequently as his declining accommodation requires, still continues to damage his sight by short-sighted economy.

The researches of Heine on the ciliary muscle, if extended and confirmed, may explain why certain myopic eyes remain immune to the disease and some hyperopic eyes are prone to be affected. In concluding I feel justified in believing that there are cases where one eye only is primarily affected with hyalitis, in which the refractive error differs little, if any, from its fellow, or even where no gross refractive error is present a hyalitis may be induced by diseases in the middle meatus of the nose as the result of improper drainage from occlusive anomalies.

GUNSHOT WOUND OF ORBIT; POST-TRAUMATIC DELIRIUM; REMOVAL OF BULLET WITH CONSERVATION OF GLOBE.*

WM. CAMPBELL POSEY, M.D.

PHILADELPHIA.

(Illustrated.)

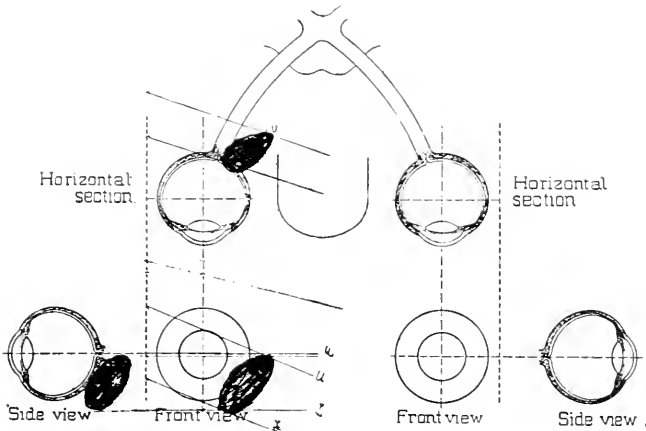
M. P., female, 38 years of age, was admitted to the Howard Hospital on January 6 on account of a pistol-shot wound of the face. The shot had been fired by another, at a distance of a few feet, the ball entering the left superior maxillary bone about $\frac{3}{4}$ of an inch from the lower angle of the nose and on a line with the same. A probe which was inserted into the wound demonstrated that the shot had passed backwards and upwards, through the posterior nares, and had entered the right orbit. There was considerable hemorrhage from the wound and from the nose and mouth; the right eye was swollen and closed. When the lids were opened it was ascertained that the eye was practically blind; vision in the left eye appeared normal. The patient had also suffered a second wound, by another shot, in the left wrist, which was found to have opened the joint and splintered some of the bones. Shortly after the accident, the case was seen by Dr. Chas. H. Frazier, one of the visiting surgeons of the hospital, who applied proper surgical treatment to the wounds and called the writer in consultation to determine the nature of the orbital lesion and the future conduct of the case.

When seen by the writer, about 24 hours after the accident, the lids of the right eye were found to be swollen and reddened and the eyeball driven forward and somewhat upward. All motion of the eye was practically abolished; the pupil was irregu-

* Read before the Ophthalmological Section of the College of Physicians of Philadelphia, April 19, 1904.

larly dilated to about 6 mm. and did not react to direct light stimulus. Vision was lost, save for faint perception of light in the temporal field. Upon ophthalmoscopic examination, the vitreous was found to contain considerable blood, so that the fundus was seen with some difficulty, but sufficient details were obtained to show that the tissues at the posterior part of the eye and those to the nasal side were much disorganized. The left eye, though extremely sensitive to light, was apparently normal and possessed full visual acuity.

The general condition of the patient was excellent. Shock had been slight; there were no general symptoms pointing to cerebral involvement, and it was thought that the bullet had not injured the brain, but was lodged in the apex of the orbit, the dis-



organization of the globe being attributed to either concussion or rupture of its posterior segment. Upon account of the probable lodgement of the ball in the apex of the orbit, and realizing the tolerance the orbit has for the reception of foreign bodies, non-operative interference was decided upon, for a time at least, until the ball could be definitely located by the *x*-rays and the patient's condition watched. Ice compresses were accordingly applied to the eye constantly, night and day, the conjunctival cul-de-sac was flushed frequently with boracic solution, and atropin was instilled night and morning. After a week of this treatment, the general condition of the patient continuing uniformly favorable, the proptosis, which was thought to have been occasioned by hemorrhage into the orbit, had greatly subsided. The movements of the globe were still greatly restricted, however, more than could be

accounted for by the presence of blood causing the protrusion of the eyeball, so that a careful study of the movements of rotation of the eyeball was made. This revealed a more or less complete loss of action in all of the extraocular muscles, with the exception of the inferior oblique, the one muscle which does not enter into the formation of the muscular cone, which surrounds the eyeball, but arises from the floor of the orbit anteriorly. This muscle seemed to function perfectly, and the outward wheel motion which it imparts to the vertical meridian of the eye could be plainly demonstrated. The fundus could now be clearly seen, the ophthalmoscope showing that the retina about the optic nerve had been thrown into folds, overlapping one another and caus-



ing great tortuosity in the course of the retinal vessels. The veins were dilated, but the arteries were small. There were large hemorrhages in the retina about the disc and to the nasal side of the disc, extending 6 or 8 discs diameters toward the equator. There were no signs of actual rupture of the globe, and the changes were thought to have been occasioned by concussion. The left eye was normal. A skiagraph of the orbit showed the bullet to be in the apex of the orbit just back of the globe.

During the two weeks following the patient improved steadily, the wound of the wrist healing rapidly and the swelling of the orbit gradually subsiding. At the end of this period, however, there was some rise in temperature (102 degrees) and a mild de-

lirium manifested itself, at first at night, but within a few days during the daytime also. Her hallucinations were those of persecution, as she fancied that the person who shot her was trying to repeat the act. The patient had been the victim of a terrible tragedy. She was a French woman of excellent character and a seamstress of unusual skill. Some months before she was shot, her sister having died, she had gone to live with her brother-in-law and look after his family. The brother-in-law was of quick temper and intemperate, and during one of his half-drunken fits of rage he shot the patient and killed himself directly afterward. She lived much of the tragedy over again in her delirium, but was never violent or maniacal. The fever quickly subsided, within



a few days, and there were no other symptoms of meningitis. The orbital condition also showed a steady improvement during this time. The mental disturbance persisted, notwithstanding careful nursing and the use of hypnotics for several weeks, when she was sent to the Pennsylvania Hospital for the Insane for special treatment. After a residence of two weeks in that institution she was discharged with her mind completely restored.

The object of the writer in presenting the case to the section to-night is not, however, for the purpose of commenting upon traumatic neuroses, nor to call the attention of the Fellows to a form of injury with which they are all familiar, but rather to ascertain their views regarding the desirability of removing the

ball from the orbit. As the accompanying chart will show, Dr. Sweet has precisely located the position of the ball, at the back of the globe, just to the nasal side of where the nerve enters the eye.

The orbit is entirely free from symptoms of inflammation and the eyeball, though practically blind (vision is reduced to the perception of movements of the hand in the temporal field), is quiescent. The patient, however, complains of some pain when the eyeball is converged, and is, it would appear, rather nervous at the thought of the ball still being in her head and seems desirous of having it extracted.

SECOND NOTE, MADE AT THE JANUARY MEETING OF THE COLLEGE.

Acting upon the advice given by the Fellows at the last meeting, the woman was readmitted to the hospital and, with the aid and counsel of Dr. de Schweinitz, the tendon of the internal rectus muscle, with its expansions into the globe, was freely divided, with a view to the extraction of the globe through this opening. With the diagram of the skiagraph in mind, the writer then passed his finger into the wound, but, while he was perfectly able to feel the optic nerve and explore the tissues about it, the bullet could not be felt, and it was only when Dr. de Schweinitz called his attention to a large body upon the floor of the orbit that the writer realized that the skiagraph had been at fault and that the bullet was inferior to the globe. Upon account of this position and the large size of the leaden mass, the incision which had been made seemed inadequate and the tendon of the inferior rectus muscle, with its expansions into the capsule of the globe, were freely divided. Even with this larger opening into the orbit, the bullet was removed with difficulty, as adhesions had formed which completely encapsulated it and bound it down to the surrounding tissues, and its large size demanded the exercise of considerable care to prevent further injury to the globe during its delivery. Its extraction was finally accomplished, however, without severe laceration of the globe or surrounding tissues. Stitches which had been inserted into the tendons of the internal and inferior rectus muscles at the time of their division were now passed through the episcleral tissues surrounding the cornea, and an effort made to preserve, to as great an extent as possible, the rotary powers of the eye.

The subsequent course of the case was most favorable; the exophthalmus which was occasioned by the hemorrhage into the orbit at the time of operation, subsiding after a few weeks of

appropriate treatment, and no mental symptoms reappeared. The movements of the eye, however, remained much impaired.

As may be seen by an examination of the patient, who is present before the section, the right eye is now (7 months after the second operation) in a state of enophthalmus and is markedly deviated downward and somewhat inward. All upward motion is lost (the inferior oblique, which of all the extraocular muscles had alone escaped injury at the time of the shooting, having been divided during the removal of the bullet) and motion in all other directions is also much impaired except down and in, where movement is fairly good, showing a partial recovery of action in the superior oblique muscle. The pupil is 5 mm. in size and does not react to light. Vision is reduced to the bare perception of light in the temporal field. Upon ophthalmoscopic examination, the media are clear, and there is some disorganization of the posterior part of the globe, as has already been noted in the previous communication. The eye is perfectly quiet and there are no subjective sensations in either eye. The corrected vision of the left eye is normal.

BREECH-PIN IN ORBIT THREE YEARS.

S. L. LEDBETTER, M.D.

BIRMINGHAM, ALA.

A few years ago a negro man came to see me with reference to an eye that was giving him some trouble. He said that about three years before, while hunting, the breech-pin of his gun was blown out, striking him in the eye and destroying it. He had not consulted a physician about it. The wound apparently healed, but there was still a discharge and recently the wound had given him some trouble; the fragment could be felt under the skin.

Examination showed that there was a foreign body under the skin, which on removal proved to be a piece of glass about 3-16 of an inch thick and perhaps $\frac{5}{8}$ of an inch in length. He explained the presence of the piece of glass as follows: A few months before this he had thrown at a dog, striking a bottle, and a fragment of the bottle had struck him, but he did not know that it had penetrated the tissues. Not finding anything else, I dressed the eye and sent him away. A week or two later he came back, with the eye still discharging. I made a careful examination with a probe and found, deep down in the orbit, a metallic substance, which seemed firmly imbedded. Under chloroform, a large opening was made through the dense cicatricial tissue and

the metallic substance removed with considerable difficulty. It proved to be the breech pin of the gun and measured $1\frac{1}{4}$ inches in length and about $\frac{7}{8}$ of an inch in diameter. It was firmly wedged in between the bony walls of the orbit, and during all that time had given no very great trouble, at least not sufficient to cause him to seek help. The accident smashed the left eye so that when the patient was first seen it looked as though an enucleation had been performed.

RECENT CHANGES IN THE TECHNIC OF SOME OPERATIONS ON THE EYE AND ADNEXA.

J. J. THOMSON, M.D.,

Assistant Surgeon to the Manhattan Eye, Ear and Throat Hospital of New York.
NEW YORK CITY.

I will first speak of some modifications in Dr. Wootton's advancement, but I think it better to describe the whole operation, mentioning the changes that have been lately introduced.

The conjunctiva is incised around one-half of circumference of the cornea, and separated from the capsule of Tenon, rather freely, at least well beyond the insertion of the muscle to be advanced. Tenon's capsule is then seized just below the lower margin of the muscle and buttonholed with a scissors. A strabismus hook is then passed beneath the muscle, and Tenon's capsule again buttonholed at the upper margin of the tendon where the point of the hook presents. Another hook is now introduced and the muscle elevated on both. The tendon is then freed of any capsular attachments, to allow of its free advancement, and the three sutures are introduced. It is in the introduction of these sutures and in the subsequent part of the operation, that the difference from Dr. Wootton's advancement exists.

Two threads, armed with a needle on each end, are now passed through the tendon near its margins, but not through the conjunctiva, and the uppermost needle removed from each. Next the tendon is cut straight across about 1 mm. in front of the stitches. The sclera is then cleared of any remaining tendon attachment, and pieces of capsule, in order to render the advancement more smooth. While the assistant gently draws the muscle forward by traction on the stitches already introduced, the third suture is passed from within outward through both muscle and conjunctiva and the uppermost needle again removed. The needle remaining on the center thread is passed through the superficial

fibers of the sclera near the corneal margin, midway between the extremities of the conjunctival incision, and then removed.

The needles remaining on the lateral sutures are next entered in the sclera, and emerge in the conjunctiva, where it is attached to the globe, as near as possible to each end of the conjunctival incision, thus preventing the stitch from being a buried one. The needles are allowed to remain on the threads for the subsequent conjunctival stitches. The center suture is tied first and anchors the muscle to the globe in the proper position, but seems to play very little part in the outward rotation of the eye. The lateral stitches are now tied, with a single knot at a time, in order to prevent buckling, while the assistant rotates the eye by drawing on the middle thread, and at the same time holds the conjunctiva out of the way with a pair of forceps. By doing this the muscle and tendon are always under observation, and the latter will be seen to come forward, above and below as far as the point where the needle entered the sclera, and therein lies the principle advantage of this operation, for if the suture cuts out, or any other accident happens, it is very readily seen.

The conjunctiva is now allowed to fall where it best adapts itself, and is held in position by suturing it to the knots already tied, and with the same thread that was used to advance the lateral margins of the tendon.

The advantage of this technic is that the muscle being advanced independent of the conjunctiva, you are always sure that the lateral expansions reach a point as far forward as the center of the cornea, and sufficient effect is thus assured.

Lack of effect was the weak point in the old operation, as described by Dr. Wootton, and was frequently due to the fact that if the knot happened to run down the side of the suture that passed through the conjunctiva, it buckled there, and advanced the conjunctiva all right, but left the tendon on the end of a long loop. It was after removing several of these loops of silk in cases where too little effect had been obtained that it occurred to me that it would be better to leave the conjunctiva alone until the muscle was known positively to be in place. Another advantage is that if one of the lateral sutures cuts out, it can readily be reintroduced, because the muscle is held in place by the center stitch, and lastly, by placing the suture in the conjunctiva after it has adapted itself to the new position of the eyeball a much smoother result is obtained. Some care should be exercised in placing all conjunctival sutures, to get them as near to the edge as possible, to prevent any of the conjunctiva from rolling under. To remove the stitches all

that is required is a single cut at the point where the first loop lies outside the conjunctiva.

I would also like to mention a method for the removal of the lacrimal sac, which renders the operation extremely simple. Merely cutting down on the sac and thoroughly removing it in its entirety, in that way, to me, seems very difficult, because there are no very definite landmarks to guide one. When paraffin injection is resorted to, the paraffin frequently passes right through into the nose, especially in cases where Bowman's operation has been done, and large probes have been passed; or, on the other hand, if a stricture exists, it backs up through the canaliculus around the point of the syringe. What seems a more simple method is this:

When the canaliculus has not already been cut, do so, and then introduce a small Theobald probe and leave it in place. This gives a good idea of the position of the sac and the bony foramen that it enters. The usual curved incision is then made, beginning about 1 centimeter above the tendo oculi, and extending downward and outward about $2\frac{1}{2}$ centimeters below it.

This incision, below the tendo oculi, should reach as deep as the sac wall, and the overlying structures should then be dissected from it for a short distance on each side. As soon as the nasal process of the superior maxilla is exposed and barred, the point of the hook which I have had made for the purpose should be passed into the foramen beside the nasal duct. If it is then turned at right angles and forced to follow the margin of the foramen outward, and behind the Theobald probe, it will come out just to the outer side of the sac, and by drawing upward on it we can be assured that it is really behind the probe and the sac. A heavy piece of silk is then threaded into the eye, which is made in the hook for that purpose, and drawn around behind the sac. This ligature is tied as far down as possible, while at the same time the probe is withdrawn. We are thus enabled to tie the sac off at its lowest part, and if it contains pus, infection of the wound may be avoided. By rubbing the hook up and down a few times before withdrawing it, the sac is readily freed from its posterior attachment, and I have found this procedure, which was suggested to me by Dr. Wootton, a valuable aid. Now, while drawing up on the ligature, the junction of the sac and nasal duct is cut across well within the bony canal, and by keeping the ligature tight, with a few strokes of the knife the sac is separated from the surrounding structures as high as the tendo oculi.

Traction downward is then made on the ligature, and with the point of the knife the dome of the sac is dissected from beneath the

internal palpebral ligament, leaving it intact. The nasal duct is now curetted, and a pledget of cotton soaked in 95 per cent. alcohol is introduced into the cavity with some pressure to stop bleeding and act as an antiseptic. The wound is then sutured and aristol blown over it, after which the canaliculus is cauterized with the galvanic cautery or platinum tip. A small roll of gauze is placed over the wound, and held in position by a pressure bandage to force the skin against the underlying structures, and primary union may be expected.

During the past year this technic has been followed in 15 cases at the Manhattan Eye, Ear and Throat Hospital, with very gratifying results, the entire sac being removed intact without difficulty. Axenfeld's retractor has not been used, the hemorrhage being controlled by hemostats, and I think by shortening the incision considerable of the hemorrhage, which is at times profuse, may be avoided.

Another operation in which I believe the technic is slightly different from that generally used, is the Mules operation. Instead of drawing the smooth, glossy and apparently non-vascular inner surfaces of the sclera together by simple interrupted sutures, a Lembert stitch is used. Three main sutures are first introduced in such a way that when they are tied, 3 mm. of raw episcleral tissue on each side is folded in and brought together, instead of the inner and comparatively non-vascular coat of the sclera. As many sutures as are deemed necessary can then be put right through, and each will be a Lembert suture. The stump, instead of having a projecting point at each end of the line of sutures, is nicely rounded, and owing to the fact that the muscles are placed at a greater mechanical advantage, the motion seemed to me to be better than in the other forms of operation.

It would seem that advancing the muscles so much would tend to pull out the stitches, but such has not been our experience in the cases in which it was tried: in fact, in two infected cases recently, the lines of sutures held together perfectly until the glass ball was extruded through the sloughing sclera above them. It is preferable to use the smallest size of glass ball in this technic.

40 W. Forty-seventh Street.

FRACTURE OF THE FLOOR OF THE ORBIT.

GEORGE F. KEIPER, A.M., M.D.,

Eye and Ear Surgeon to St. Elizabeth Hospital, St. Joseph Orphan Asylum,
Children's Home, Indiana State Soldiers' Home, Etc.

LA FAYETTE, IND.

(Illustrated.)

John M., aged 33, a member of the football team of Battle Ground, was brought to my office on the evening of October 15 with the following history of accident: While playing football with the team at Linden, the same day in a struggle for the ball, a player of the opposite team, while running, struck our patient



with his vertex upon the patient's cheek just as he was raising his head. For a time he was unconscious, but quickly recovered himself.

Examination showed the following: The skin was intact. The tissues surrounding the orbit were swollen, bruised and discolored. Palpation showed a distinct notch just above the foramen for the superior maxillary branch of the trigeminus. The break extended itself into the orbit as far as the little finger could reach. It extended downward to the infraorbital foramen. The eyeball and adnexa were unharmed.

The æsthesiometer showed sensation upon that side of the face markedly diminished as compared with sensation on the opposite side of the face. Examination of the nose showed the cartilaginous septum displaced toward the injured side. This was straightened and held in place by the hollow nasal splints of Mayer. The sen-

sation has in a great measure returned. Photographs are submitted, taken after the swelling subsided, showing also depression of the side of the face.



The treatment consisted in straightening the septum and the application of soothing lotions to reduce the ecchymosis and swelling. There being no external wound, it was thought best not to make any, especially since the depression is not very noticeable except on close inspection.

THE BREECH-PIN IN OPHTHALMOLOGY AND
SURGERY.

HAROLD GIFFORD, M.D.

OMAHA, NEB.

(Illustrated.)

That the explosion of the old-style of muzzle-loading gun is occasionally accompanied by the entrance of the breech-pin into the head, with or without the destruction of the eye, is a fact known to all familiar with the classical text-book of Noyes, although many authors make no mention of this particular form of accident. All the injuries of this kind have certain typical characteristics and, as the case which I have to report is the first in which the utility of the *x*-ray, both for the diagnosis and for determining on the plan of operation, has been demonstrated, I have thought it worth while to report it, together with a general review of the subject.

On Sept. 25, 1903, G. W., aged 38, came to me, stating that two years before, while attempting to shoot a cat with an old-fashioned musket, the latter exploded and knocked him senseless. The attending surgeon found extensive wounds of the right eyelids, with the eye so nearly destroyed that it was at once removed. The external wounds were closed and the patient made a good recovery, except that from time to time until the present he has had occasional spells of severe pain on that side of the face and head, ending after a few days with a discharge of pus from the nose. Latterly, these attacks have become more severe and more prolonged and for the last month he has had a numbness and weakness of the right arm and hand; and this partial paralysis, which had reached a point where ordinary manual labor was at times impossible, had brought him to Omaha in search of relief.

I found his left eye to be normal; the right eye was gone and, on separating the partly closed lids, an opening $\frac{1}{4}$ of an inch in diameter was visible leading down and inward, at the bottom of which something black could be seen, and this, on being touched with a probe, was found to be metal. An inspection of the right nasal cavity showed a mass of metal firmly impacted in the upper and outer wall. Recognizing the fact that this was probably the breech-pin of the gun, and in order, if possible, to gain some idea of its position so as to be able to remove it more easily, I had a skiagraph taken from the side, which is here reproduced. On the following day, after a tamponade of the right posterior nostril to guard against undue hemorrhage, a strong bulldog forceps

was introduced through the opening in the floor of the orbit and in a few minutes the larger part of a breech-pin was removed by main force. The operation was done in the evening and, being somewhat elated at securing what I thought was the whole foreign body so easily and without serious hemorrhage, I did not



Fig. 1.—Skiagraph from Gifford's patient. Note the sharp shadow caused by the displaced fragment of upper orbital margin.

compare the piece which I removed with the skiagraph until the next day. This comparison made it plain that some foreign body must still be left in the man's head, and on another examination the screw shown in Fig. 2 was discovered in the antrum and was removed with some difficulty through the orbital opening. The

man then made an uninterrupted recovery, the pain in the head and the weakness of the right upper extremity disappearing within a few days. With regard to this latter symptom, which in some respects is the most remarkable feature of the case, I regret that the patient said so little about it before the operation that I gave him no careful examination as to the nature and extent of the disability, and it was only after the operation, when he was practically well, that in going over his history I discovered how important this symptom had been. It was probably due to a cerebral or meningeal congestion, but its occurrence on the right side is hard to explain except on the theory of undeveloped decussation.

Aside from the help given by the skiagraph, the latter introduced an element of uncertainty on account of a sharply defined shadow at the upper and anterior margin of the orbit, the question being whether this might not be due to another chunk of metal. More careful examination of the orbit, however, made it evident that a piece of the margin had been broken off and displaced downward, leaving little doubt that this was the cause of the shadow.

The earliest breech-pin accident that I have found in looking up the subject is that of Waldon.¹ His patient was a male, aged 19, who, while out hunting, was injured by the explosion of his gun and lay all night unconscious in the woods. The description of the injury is somewhat confusing and far from complete, so I give it verbatim: "On my arrival I found my patient in his perfect senses, notwithstanding the *os frontis* and *dura mater* had been perforated a little on the right side and above the frontal sinus: a considerable quantity of the cerebrum was then upon his clothes and exuding from the orifice of the wound. From a consideration of the nature of the injury and the manner in which it could have been inflicted, I hesitated not a moment in declaring that the breech (as it is called), which screws into the back part of the barrel of the gun, could only have effected the mischief. Notwithstanding he was at this time sensible, I still doubted, from the force with which the breech was dislocated from the barrel, and the resistance of the *os frontis* and *dura mater* being overcome, whether or not it might be left in the cavity of the cranium. I immediately, in the most gentle manner possible, introduced my finger as far as I deemed it prudent, in order to detect whether any extraneous body was lodged there or not, but without effect. On removing it at this time (the second day after the injury) some part of the cataplasma from the in-

1. *Memoirs Med. Soc.*, London, v. 1799, p. 407.

ternal canthus of the left eye, I discovered by my probe the head of one of the screw pins which fasten the lock to the stock almost buried beneath the inflamed integuments, and which had penetrated the diaphanous bone, forming the superior portion of the orbit of the left eye, upward and obliquely backward through the cerebrum toward the right os parietale, and which I extracted with some difficulty." Several days after this the patient was apparently at the point of death with symptoms of increased intracranial pressure, but these suddenly disappeared and the patient improved so that he went out on foot and on horseback and even attended festivities, although a discharge of pus continued from the wound. Fifty-one days after the accident, however, he had a

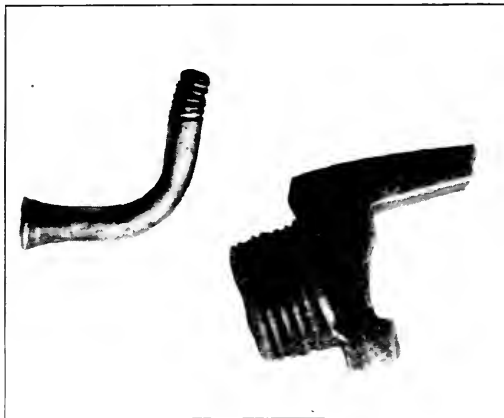


Fig. 2.—Breech-pin $1\frac{1}{2}$ inches long, weighed 11 grams.

severe chill, with great pain in the back of the head and muscles of the neck. These symptoms continued for a week, when, "during the act of vomiting the attendants perceived, on a sudden, a large projection on the right side of the os frontis, underneath the sound integuments and about two inches from the wound." This projection was opened and proved to contain the breech-pin of the gun, which was about 3 inches in length and weighed 3 ounces and 1 dram. It lay with the screw end pointing to the os frontis, the other to the occiput. "The unhappy patient [who before the operation had been conscious and rational] immediately became paralytic and on the third day after extracting the substance from the head died under a complete sub-sultus tendinum." No post-mortem. The only reference to either eye in this article is that contained in the quotation.

The other cases I have found are the following: Rogers²: Nine-teen-year-old boy; gun exploded July 10; a long opening just above center of left orbital ridge, brain substance exuding; no suspicion of foreign body until August 4; August 5, whole breech-pin removed with moderate difficulty; good recovery made. No description of eye lesions except that lids of both eyes much swollen when first seen, but in closing Rogers says sight of right eye totally destroyed; that of left eye good.

Cooper³ makes brief mention of a breech-pin blown into orbit, destroying eye; removal next day.

Ballingall⁴: Piece of a gun breech blown into man's head through the bridge of the nose, between the eyes. External wound healed within a year. Fourteen years after accident the iron was discovered in the back part of the nose, and, as it was causing very little trouble, B. thought best to leave it alone, and further deponent sayeth not.

Zander and Geisler⁵ cite briefly Keith⁶: Breech-pin in orbit four months, penetrating between eye and nose root and embedded in the bones of the nose, which had to be separated in order to remove it. Left eye destroyed.

O'Callaghan⁷: Lieut. F.'s fowling piece burst; circular wound of forehead just above nasal eminence of frontal bone. This healed and the patient resumed duties. A year later a piece of iron was seen making its way from the nose into the mouth. Attempt to file this off given up. Death eight years after the accident, from some sudden attack, apparently having been brought on by his habit of drinking. On examining the head, the whole of a large iron breech-pin of a gun, with the screw which attached it to stock, was found lodged in the forehead. The anterior portion of the right hemisphere of the brain rested on the flat part of the breech, from which it was separated only by a false membrane. No mention of injury to eyes.

Hughes and Fletcher⁸: Gun exploded, injuring man's forehead, just above nose. Wound did not heal promptly; death from brain abscess fourteen months later; at autopsy, piece of breech weighing 1½ ounces found in roof of right orbit and frontal fossa; at time of accident both eyes were badly inflamed and sight of left eye "nearly destroyed."

2. *Medico-Chir. Trans.*, London, 1827, vol. xiii, p. 283.

3. *Injuries of the Eye*, p. 56.

4. Cited by Bertheraud, *Annales d'Oculistique*, vol. xxvi, 1851; from *Edinburgh Medico-Chi. Journ.*, July, 1842.

5. *Verletzungen des Auges*, p. 337.

6. *Med. Times and Gazette*, Oct. 29, 1858.

7. *Dublin Medical Press*, vol. xiii, p. 81.

8. *The Lancet*, 1858, London, September 18.

Lawson⁹: Male, aged 28, breech-pin, 11 $\frac{1}{4}$ ounces, in right frontal sinus and upper part of nose for twelve years; removed through nose; good recovery; eyes apparently uninjured.

Waldhauer¹⁰: Male, aged 33 years. Shot at a doe with a musket; lay four hours unconscious; wound dressed and healed well; no trouble for three years, then four bad headaches, ending with discharge of pus from orbital cavity. Seen by W. four years and three months after injury. Scar from upper inner right orbital margin through upper lid. Socket looked as if eye enucleated, but two fistulae existed from which pus came. Probe through these, felt hard foreign body. Operation: whole breech-

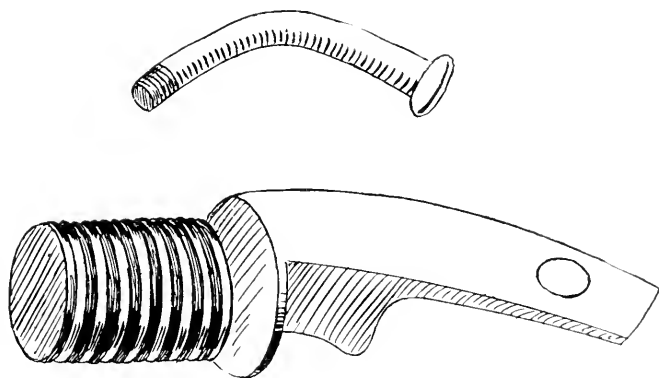


Fig. 3.—Breech-pin and bolt from Walden's patient. Case reported 1799.

pin of old-fashioned musket removed with great difficulty after four hours' chiseling of the orbital walls. Before the operation the man had felt perfectly well except for the occasional headaches. After it, meningitis and brain abscess developed rapidly, ending fatally. Autopsy showed that the small end of the breech-pin had penetrated the posterior wall of the orbit just below the small sphenoidal wing and had passed on through the temporal lobe till it struck the edge of the petrosal bone. W. raises the question as to whether the removal should have been attempted, and says that if he could have known how the body lay he would probably have turned the patient over to some one else with better operative facilities.

Noyes¹¹: Male, aged 19 years; gun burst at breech, September 18; unconscious four days. October 5, came to New York Eye and Ear Infirmary; right eye suppurating and fistula near inner

9. Diseases and Injuries of the Eye, London, 1874, p. 336.

10. Deutsche Zeitschrift für Klin. Chirurgie, 29, p. 266.

11. Am. Jour. Med. Sciences, 110, p. 45.

end of brow. No foreign body suspected. Wound healed "very perfectly." Returned to the infirmary February 8 of the following year feeling first rate but wanting operation for cosmetic result. Fistula at inner end of eyebrow and offensive discharge from the nose; first seen by Noyes himself February 13. Probing revealed foreign body. Operation February 17 and breech-pin 4 7-16 inches long removed from the orbital, nasal and cranial cavities. Meningitis, brain abscess, and death March 28.

Kemper¹²: Male, aged 18; gun burst into many pieces; seen 21 hours after accident; vertical wound 11½ inches long through both plates of frontal bone just above right eyebrow. Small end of breech-pin 11½ inches long, one-half inch beyond inner plate, easily removed; wound suppurated and pieces of bone and hat came out later, but, with the exception of one convulsion, when pus became pent up, no bad symptoms. Complete recovery except that he "felt the heat in summer."

Parker¹³: Male, aged 24; breech-pin and stock bolt blown through side of face into nasal cavities. External wound healed well; discharge from nostrils and fistula under left side of upper lip for 5 years. Removal through incision beneath lip. Good recovery.

Wenyon¹⁴: Chinese farmer, aged 31; shotgun exploded. Seen by W. about two months later; cicatrix and fistula at right side of nose; sight of right eye gone, and "cornea so red that it could hardly be distinguished." Headache and dizziness. Breech-pin 3 inches long found at the depth of 1 inch and removed without much difficulty; wound healed in ten days.

Leslie¹⁵: Male, aged 24; while shooting at a mark, gun exploded, knocking him down; lacerated wound at inner angle of left eye, healed after several weeks; thereafter well, except for occasional severe headaches. At the end of 5 years fistula formed in old scar and discharged pus for two years, during which time the skin melted away until the foreign body could be seen in the fistula at the inner angle of the left eye. When seen by Leslie, 7 years after the accident, the vision of this eye was about 15/20. "The right eye was blind from traumatic cataract." Under chloroform, after an hour's hard work, Leslie removed from the orbit an entire breech-pin, with the screw by which it had been held to the stock still sticking in the hole for it. Good recovery, part of breech-pin 43 mm. long blown through right upper lid,

12. *Am. Jour. Med. Sciences*, Jan., 1885, p. 128.

13. *London Lancet*, Feb. 28, 1885, p. 378.

14. *British Med. Jour.*, Oct. 12, 1895.

15. *Wright's Text-book of Ophthalmology*, p. 55.

lodging between eye and orbital roof. Removal twenty hours later with much of the superior and interior wall of the orbit. Recovery. Immediately after the accident the bent stock bolt was found with vision the same as before the operation. The breech-pin was $2\frac{1}{2}$ inches long and the stock screw 1 inch long.

Ledbetter¹⁶: Adult male; breech-pin in inner side of left orbit three years; removal; recovery. Eye smashed at time of accident. Reported more fully in the present number of the RECORD.

Morrow¹⁷: Male, aged 56, explosion of old shotgun, greater part of breech-pin 43 mm. long blown through right upper lid, lodging between eye and orbital roof. Removal twenty hours later with much of the superior and interior wall of the orbit. Recovery. Immediately after the accident the bent stock bolt was found "sticking out of the eye." Unruptured but disorganized eye removed for freer drainage.

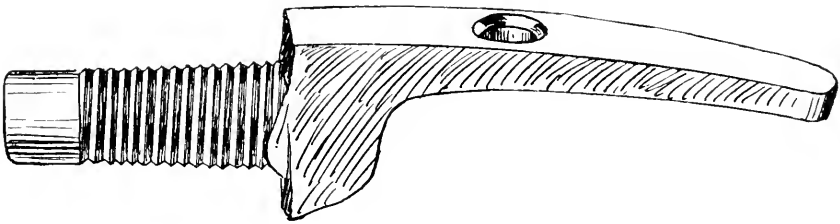


Fig. 4.—Pin from Noyes' patient. The largest on record.

Beside the foregoing, Waldhauer¹⁸ states that he has seen other cases similar to the one reported, but without such serious results. He also mentions the case of a blacksmith who had a breech-pin blown into his forehead, but enough of it protruded so that the patient himself removed it with powerful forceps, losing some brain substance, by the way, but making a good recovery. Dr. D. C. Bryant of Omaha has told me of a case, in his practice, in which a breech-pin was blown part way into the orbit, but which he removed at once without difficulty and without serious results. The scarcity of such cases in the German literature may possibly be accounted for by the fact that the Germans have never been much in the habit of reporting isolated cases. In French I have found nothing belonging strictly in this paper, except the Scotch case cited by Bechteraud. Perhaps the French and the Germans have better guns than the Anglo-Saxons.

It seems odd that in the elaborate history of our civil war

16. Jour. Am. Med. Assn., Oct. 17, 1903, p. 962.

17. Ophthalmic Record, October, 1904.

18. Loc. cit.

there should have been no breech-pin injuries reported, but I have been able to find none, and in the eye division of the corresponding German work,¹⁹ the nearest approach to it is the mention, on page 206, of an injury to the eye by the nipple-screw of an exploded gun. The most probable explanation is that with new weapons loaded with a definite charge, it is very unusual for a gun to burst.

On looking over a series of these histories, perhaps the most striking feature is the unanimity with which nearly all surgeons to whom these patients come for first aid, agree to leave the breech-pin undisturbed in the head, when it once has been blown in out of sight; but the conditions under which these accidents occur make this, on further reflection, seem not so strange. The patient is either unconscious, or so glad to find that he is still alive that but little attention is paid to the condition of the gun. The external wounds are generally so extensive that they do not at once arouse the suspicion of something having penetrated the tissues deeply, and the surgeon sees so much to do on the outside that the thought of investigating the interior appears to come but seldom. Add to this, the well-known accommodating disposition of the orbital tissues toward all sorts of foreign bodies, and it is not so hard to understand how a physician who has not happened to hear of **this** particular form of accident can devote himself to patching up the external injuries without ever thinking of the possibility of a large piece of metal remaining in the head. Personally I can recall at least one case, in which I am now quite certain the patient must have had a breech-pin in his face, but at the time I never thought of such a thing, and let the man escape without a thorough examination. And that this does not occur in the backwoods only is shown by the case of Noyes, in which the patient was treated at the New York Eye and Ear Infirmary for a number of days on several different occasions, before the presence of the breech-pin was suspected.

Another point which this case of Noyes emphasizes is the necessity for caution in making the prognosis in cases where the breech-pin has been in the head for some time. Both in this case and in Waldhauer's the patient was practically well before the operation, and in both meningitis developed rapidly immediately afterward. Both authors raise the question as to whether it would not be best in another case to leave the foreign body alone; and while I think there can be no question that an operation is imperative in all such cases, it behooves us to go about it with the

19. *Die Verwundungen der Augen bei den Deutschen Heeren im Kriege gegen Frankreich*, Berlin, 1888.

utmost caution, and with a full warning to the patient, as to the possibility of a fatal result.

With regard to the safest procedure, there is no room for doubt that even after the presence of the breech-pin has been ascertained, a skiagraph or two should be obtained wherever possible. In my own case the skiagraph was all that kept me from leaving the stock-bolt in the man's head after the breech-pin had been removed; and I think it highly probable that in some cases of our list in which no mention of the stock-bolt was made, this article was carried away by the patient for future emergencies. A skiagraph may also be of great use in making the prognosis, since if the shadow shows plainly that the breech-pin is partly or wholly in the cranial cavity, the outlook is dubious, even with the best of surgical skill. In the case of Leslie, a skiagraph from the side would have been much less valuable than one from above downward. The difficulty in removing the breech-pin, in this case, was due to the presence of the stock-screw in the intact plate of the breech-pin.

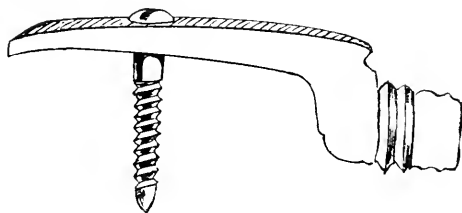


Fig. 5.—Articles from Leslie's patient. Remained in orbit 7 years. Sight not much injured. The only case found where screw or bolt stayed in its hole.

and this might not have been shown at all in a skiagraph from the side. This case, to which Dr. Bryant of Omaha kindly directed my attention, is in some respects a most remarkable one, not only on account of the seven years during which the foreign body remained in the orbit, but from the fact that the eyesight was practically uninjured either by the accident or the difficult operation.

From a consideration of the cases here collected the following conclusions are obvious enough: 1. That in all cases of injury of the eye or face from gun explosions, one should think of the possibility of there having been blown in out of sight, not only the breech-pin, but also the stock-bolt or screw-stock. 2 That whether or not the presence of a foreign body can be detected by probing, it is well worth while to have one or more skiagraphs taken before the operation, in all cases except those seen within a short time after the accident: and even in the cases where the

breech-pin can be removed at once and easily, a skiagraph taken after the operation is desirable to make sure that the stock-bolt or some other piece of the gun is not left behind.

With the steady conversion of the muzzle-loading gun into junk, this particular form of accident is bound to become rarer, but enough of these weapons are still in use to warrant every physician in trying to remember the latent breech-pin as a possible source of error and of trouble.

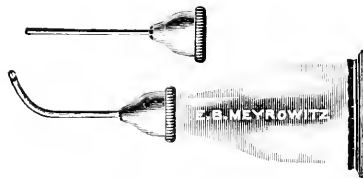
A COMBINED ANTERIOR CHAMBER IRRIGATOR AND LACHRYMAL SYRINGE.

E. C. ELLETT, M.D.

MEMPHIS, TENN.

(Illustrated.)

The instrument illustrated in the accompanying cut is similar in many respects to one that was used by the late Dr. Peter Keyser of Philadelphia, and with which I became familiar when house surgeon at the Wills Eye Hospital. The body of the instrument is of glass and shaped like a Gruber ear speculum, with a lip surrounding the large end. The tip is of gold, fitting to the body with a friction joint. A piece of rubber dam covers the large end of



the body, being held by a rubber band below the lip. The tip for use in the anterior chamber is suitably curved, flattened, and of generous caliber. The lachrymal tip is smaller, rounded in cross-section, and may be straight or curved.

The manner of using the instrument is apparent at a glance. Its good features are its small size and lightness, and the fact that it can be readily sterilized by boiling. It works admirably, either in washing out cortical debris and blood after cataract extraction, or inflammatory exudates in hypopyon. It is intended that a fresh piece of rubber dam shall be put on each time the instrument is used. It is made by E. B. Meyrowitz.

Reviews.

TUBERCULIN T. IN THE DIAGNOSIS AND TREATMENT OF INTERSTITIAL KERATITIS.*

DR. G. STANCULEANO.

[Reviewed by Alvin A. Hubbell, M.D., Buffalo.]

The etiology of interstitial keratitis which appeared a short time ago to be definitely established, is again being discussed. Mackenzie attributed it to scrofula, and Hutchinson afterward believed it to be due to inherited syphilis, and his opinion was adopted by the majority of oculists (Parinaud, Fuchs, Hirschberg). However, for a long time Panas and Fournier recognized various causes, the former calling this affection cachectic keratitis, and the latter dyscrasic keratitis. Michel attributed a large rôle to tuberculosis. Recently the debate has been reopened by the clinical and anatomic researches of von Hippel. Pfister, in statistics of 130 cases, had found only 40 per cent. of heredito-syphilitics. As to von Hippel, 30 to 50 per cent. of his cases were not imputable to hereditary syphilis. He called in question the statement that the so-called teeth of Hutchinson and deafness were characteristic of heredito-syphilis. He had seen articular lesions in 20 per cent. of the cases, of which several developed like true articular tuberculosis. Von Hippel claimed that the signs of heredito-syphilis were often lacking, and found tuberculosis in different organs. Besides, this affection is met with also in animals. Von Hippel has published the anatomic examination of a case of interstitial keratitis, in which he found, at the periphery of the cornea, nodules filling the angle of the anterior chamber, and consisting of epithelial cells, with giant cells in the center.

With the desire to elucidate the etiology of interstitial keratitis, Stanculeano has had the idea of using injections of tuberculin T., the suggestion having been made to him by reading an important work of Morax and Chaillous on ocular tuberculosis. At the time he completed his study, his attention was called to a similar work of Dr. Enslin. This author, like him, used the tuberculin T. of Koch, dissolved in a 25 per cent. solution of carbolic acid, and took the temperature of the patient every two hours. The injections were given from three to six, and some-

* *Annales d'Oculistique*, November, 1904.

times more, days apart, and repeated five or six times in most of the cases. In one case the injection was repeated twice, in another ten times. His researches were on 24 patients affected with interstitial keratitis. He divided them into two groups: the first consisting of 11 persons presenting signs of heredito-syphilis, and the second of 5 having signs of tuberculosis, of which 3 had both tuberculosis and heredito-syphilis. He omitted 5 doubtful cases. Among 11 patients of the first group there was no reaction in 9. In those there was an injection of 5 milligrams T., three of 3 milligrams T., in three others 1 milligram T., one of $\frac{1}{2}$ and another of $\frac{1}{4}$ milligram T. Two heredito-syphilitic patients had reaction, one with $\frac{1}{4}$ milligram T., in a classical manner, the other with 1 milligram T., without the typical curve. Among the 8 cases in which there was found tuberculous signs or antecedents, there was reaction in 2 with $\frac{1}{10}$ milligram T., 5 with 1 milligram T., and another with 3 milligrams T. The febrile reaction generally commenced ten to twelve hours after the injection, raised suddenly, and fell in the same way. Enslin had never observed a local reaction characterized by sudden redness and inflammation, and he insisted on the difficulties of revealing them in a patient affected with interstitial keratitis. He believed, however, that one rarely has to deal with a tuberculous interstitial keratitis, but aside from hereditary syphilis, tuberculosis concealed in the organism was an important etiologic cause.

Stanculeano, in his experiments, used old tuberculin T. of Koch, in a $\frac{1}{2}$ per cent. carbolic solution made by Hoechst, and prepared by his friend, Dr. Rainer.

After reporting 8 cases in detail, he analyzes them as follows: "All our patients appeared unaffected with tuberculosis, their age varying from 7 to 24 years of age. One of our patients was injected a single time with 1 milligram T. and had no reaction. The others received increasing doses of tuberculin, all of which, except one child of 10 years, reacted without exceeding 1 centigram T. The same as Koch, the more recent authors, Freymuth, Grünewald, etc., carry the injections up to 1 centigram T., before admitting the non-reaction to the tuberculin. In reviewing the observations of Enslin, it was found that among patients who did not react to the tuberculin, only one had received 5 milligrams T., three had had 3 milligrams T., three 1 milligram T., one $\frac{1}{2}$ milligram T., the last $\frac{1}{4}$ milligram T. It is probable that some of these patients would have reacted to a larger dose, as happened to the patients of Freymuth and to ours. In detailing our results, we see that five patients presented the thermic reaction with gen-

eral symptoms, a single one showing, beside and in a very manifest manner, the local reaction in the eye. In the first group two patients reacted to 1 milligram T., one to 2 milligrams T., another to 5 milligrams T., and the last to 1 centigram T. We have considered as positive reaction only a temperature of 28° (centigrade) or above. The injections, given with great antiseptic precaution, were made in the gluteal region, always at 10 o'clock in the morning. In the great majority of cases the febrile reaction began in the night or in the next morning, and rapidly attained the maximum, from which it suddenly descended. If the injection was repeated in the same dose a few days afterward, there was a new reaction in a certain number of cases, and in others it was necessary to increase the dose in order to obtain it. In the end, patients resisted very strong doses. Among the 5 cases we have not been able to establish manifest local reaction. However, in two observations after the tuberculin had been used, the pericorneal injection was more intense, and there was lachrymation and photophobia. The most interesting case is that related in the first observation, because of the character of the thermic curve, as well as the local reaction.

"In a few words, this case was that of a woman 22 years of age, affected for four months with interstitial keratitis of the right eye. She had a good constitution without heredito-syphilitic antecedents or acquired syphilis, but presented suspicious signs of tuberculosis, there being incomplete dullness on percussion, and prolonged expiration at the apex of the left lung. The injection of 1 milligram T. caused no reaction, but, on the contrary, 2 milligrams T. produced a rise of temperature to 38.5 degrees. Then the patient became more sensitive to the tuberculin, when 1 milligram T. reacted to a temperature of 40 degrees, and $1\frac{1}{2}$ milligram T. to 38.1 degrees. Later there was no further reaction, even in larger doses. The thermic ascension was accompanied by a very manifest reaction on the side of the diseased eye, the bulbar conjunctiva became very red, the pericorneal injection more intense, the corneal trouble more diffuse, and the anterior chamber much disturbed. The patient complained of severe pain in the eye, and the sight was more confused. This reaction always accompanied the thermic reaction, following the same curve. At the end of the treatment, when the injections produced no more thermic reaction, the eye was calm; under the influence of the injections, the more recent corneal infiltrations were dissipated, and the old ones were thinner. The sight was much improved. We believe that

In 1908, the tuberculin had a favorable influence on the course of the keratitis.

"In another observation, without the local reaction being so manifest after the injections, the tuberculin seemed to have aided in the disappearance of the infiltration.

"These two cases appear to approach those of Shick. This author has published an important memoir serving to demonstrate the therapeutic action of tuberculin T., in irido-corneal tuberculosis. In regard to our other patients, the action of the tuberculin on the progress of the interstitial keratitis has been *nil*.

"In all the cases the frequency of the thermic reaction, after the injections of tuberculin in interstitial keratitis, appears to us strange. Frantz, having found that 61 per cent. of Bosnian recruits, accepted in the regiment as healthy, reacted to tuberculin, he began to doubt the practical importance of tuberculin as far as diagnostic value is concerned. However, the most recent authors, Freymuth, etc., attributed to tuberculin T. a high diagnostic and practical value. It still remains to specify the relation between tuberculosis and interstitial keratitis. Enslin regards interstitial keratitis as rarely a tuberculous affection. He believes that in hereditary syphilis there is also a tuberculosis latent in the organism, contributing often to the production of interstitial keratitis. The question can only be definitely cleared up by numerous anatomo-pathologic examinations. The anatomo-pathologic examination of von Hippel is known, and in this there was found in the cornea of a patient affected with interstitial keratitis, and suspected of tuberculosis, tubercular follicles with giant cells."

MANSON'S EYE WORM OF CHICKENS, WITH A GENERAL REVIEW OF NEMATODES PARASITIC IN THE EYES OF BIRDS.

BY B. H. RANSOM, B.SC., A.M.,

Scientific Assistant in Charge of the Zoological Laboratory, Bureau of Animal Industry.

[Reviewed by H. V. Würdemann, M.D., of Milwaukee, Wis.]

The first-named paper is in two parts. The first part comprises a complete account of a parasitic nematode, the presence of which in North America has not previously been recorded. This parasite is found beneath the nictitating membrane of the eyes of chickens and peafowl, and chickens thus affected frequently exhibit a severe

ophthalmia, which, if left untreated, ends in the loss of the eyes and may even lead to fatal results. The second part contains a complete summary of all the parasites allied to *Oxyspirura Mansoni* which occur in the eyes of birds.

The attention of the Bureau of Animal Industry has recently been called to the occurrence of a parasite in the United States which has hitherto not been published in this country. The parasite in question is a round worm known as *Oxyspirura Mansoni* (= *Filaria Mansoni* = *Spiroptera Emmezei*) and is found beneath the nictitating membrane of the eye of chickens. The worms of this species are white, small and threadlike, measuring over a half an inch in length, with the thickness of a fine sewing needle. The body is thickest near the middle and tapers gradually toward each end. The posterior end is the more pointed, and in the male is more or less curved ventrally, while in the female it is straight. The females are generally slightly larger than the males. The number which may be present in a subject varies from few to many; Mr. H. C. Niles of Summerland Key, Key West, Fla., states that he has taken nearly 200 from the eyes of a single chicken.



Fig. 1.—Manson's eye worm (*Oxyspirura Mansoni*). Male on the left and female on the right. Natural size. Original.

The presence of these worms in the eye is frequently borne by chickens without any apparent inconvenience. For example, the chicken mentioned above was said to be perfectly healthy and entirely without symptoms. On the other hand, it seems that considerable irritation of the ocular membranes would be produced by the movements of the worms, which are seen to be very active when the nictitating membrane is drawn away from the cornea so as to expose them to view. Apart from the possibility of an actively irritating influence, the worms undoubtedly have an injurious effect merely from their presence as foreign bodies. It would appear in any case that the presence of these parasites in a locality so sensitive would tend to establish an inflammation, and at least be a condition predisposing to inflammation from other causes.

While the presence of the parasites, as already mentioned, is commonly borne without seeming inconvenience, such is not always the case. Distinct symptoms of irritation become evident at times. Emmeze (Emmeze & Mégnin, 1901a) observed that an affected bird shows signs of uneasiness and scratches at its eyes, which exhibit an acute inflammation accompanied by an abundant secretion of tears. The first stages of the inflammation seem to be confined

almost entirely to the eye itself. The nictitating membrane, which is swollen and projects slightly beyond the eyelids at the corner of the eye, is kept in continual motion to and fro, as if to remove some foreign body. The eyelids become stuck together and a white cheesy matter, easily removed, gathers beneath them.

Further symptoms appear which seem to be due to a complication with catarrh. The tissues surrounding the eye and the infra-ocular sinuses become highly inflamed, and are reddened and swollen. The eyeball is likely to be involved; the cornea becomes opaque, and later the entire eyeball is destroyed and the orbital cavity is filled with a yellow purulent material. When this stage is reached the worms are no longer to be found in the eye. The nostrils may also be affected and become obstructed in the catarrhal

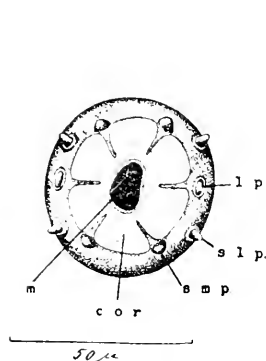


Fig. 2.—Manson's eye worm (*Oxyurispirura Manson*). Anterior view of head: c. o. r., circumoral cuticular ring; l. p., lateral papilla; m, mouth; s. l. p., sublateral papilla; s. m. p., submedian papilla. Enlarged. Original.

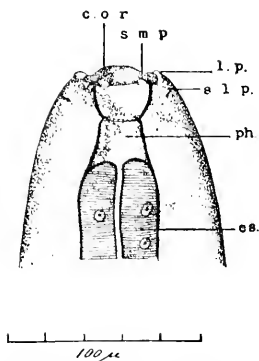


Fig. 3.—Manson's eye worm (*Oxyurispirura Manson*). Dorsal view of head: c. o. r., circumoral cuticular ring; es., esophagus; l. p., lateral papilla; ph., pharynx; s. l. p., sublateral papilla; s. m. p., submedian papilla. Enlarged. Original.

process, and finally fatal results may follow. The bird becomes somnolent, scarcely ever declines in strength, becomes anemic and dies in three or four days.

The treatment consists in the removal of the worms, combined with the treatment of the associated catarrh. The worms may be removed either by direct mechanical means, as with small forceps, which operation is more or less dangerous and painful to the fowl, or by irrigating with a solution of bicarbonate of soda or a 1 or 2 per cent. solution of creolin. The irrigation has the effect of partially dislodging the worms, which may then be removed entirely by wiping away with a soft cloth.

Further treatment is directed toward alleviation of the inflammation or the cure of the catarrh which may have been established.

Irrigation of the eyes with a mildly antiseptic solution, such as a 4 per cent. boric-acid solution or 1 per cent. creolin solution, is indicated, together with irrigation, also, of the nose and mouth if the nostrils are affected. Anointing the eyes with a mixture of lard 9 parts and iodoform 1 part, or with carbolyzed vaselin, is likely to give good results in some cases. The general sanitary conditions should

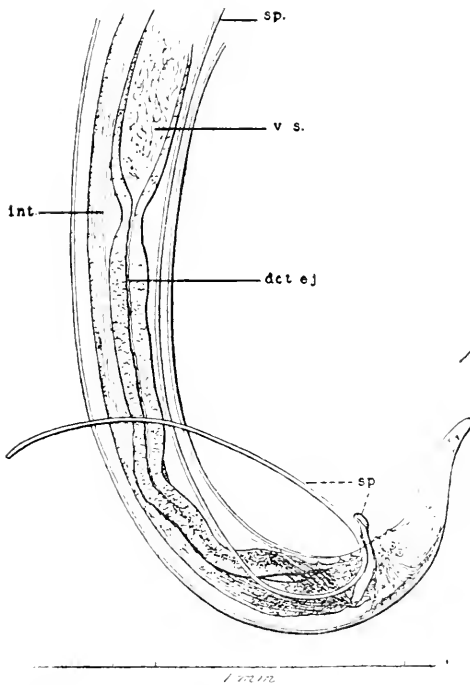


Fig. 4.—Manson's eye worm (*Oryspira Manson*). Lateral view of posterior end of male: *dct. ej.*, ejaculatory duct; *int.*, intestine; *sp.*, spicules; *v. s.*, seminal vesicle. Enlarged. Original.

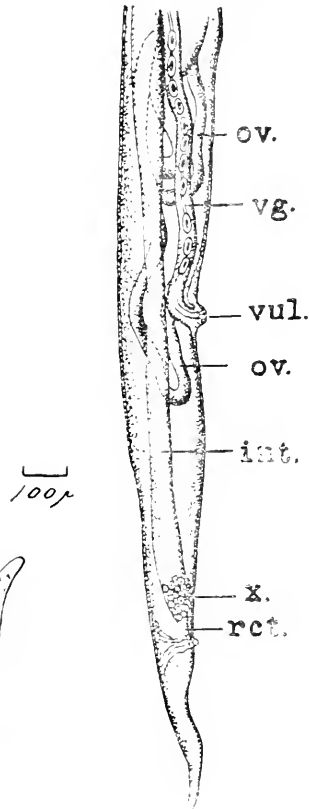


Fig. 5.—Manson's eye worm (*Oryspira Manson*). Lateral view of posterior end of female: *int.*, intestine; *ov.*, ovary; *rct.*, rectum; *vg.*, vagina; *vul.*, vulva; *x.*, cells surrounding rectum. Enlarged. Original.

also be attended to and stimulating food furnished as in the treatment of simple catarrh.

Prophylaxis.—No special prophylaxis is evident, as the life history of the parasites is so far unknown. Certain general precautions which are likely to prevent the spread of this as well as of other parasitic diseases should, however, be taken. Affected fowls should be isolated. The chicken houses should be

kept clean and disinfected frequently by the use of boiling water and whitewash, with which carbolic acid, creolin, or other disinfectant has been mixed. The yards likewise should be kept clean and free from excessive moisture. Chickens should not be allowed to drink from stagnant pools, but pure drinking water should be furnished in vessels which can be frequently cleaned.

We find this species first referred to by Cobbold (1879b, p. 440) in the following words:

"Here I may mention that on the 10th of April, 1878, I received a letter from Dr. Manson of Amoy, announcing his acquaintance with a filaria infesting the eye of the fowl. On the 9th of May I also received from Dr. Manson the head of a bird showing examples of the worm. As the species is new to science I have pro-

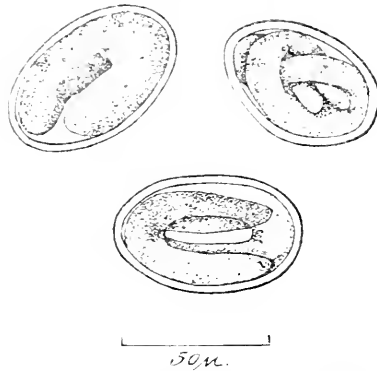


Fig. 6.—Manson's eye worm (*Oryzias Mansonii*). Eggs containing embryos. Enlarged. (Drawings by E. C. Stevenson.)

posed to call it *Filaria Mansoni*, after the discoverer. The male is five-eighths inch and the female three-fourths inch in length."

Magalhaes (1888) was the next observer to encounter this worm, which he described from specimens collected in Brazil, five from the eye of a fowl and two from the eye of a peacock.

Seven years later (1895) he published a French translation of his original Portuguese paper. In his later paper he was able to change to a positive statement his earlier expressed belief as to the identity of the Brazilian form with *Filaria Mansoni*, having had in the meantime opportunity to study specimens collected by Manson in China.

Emmerez & Mognin (1901a) noticed a peculiar ophthalmia among chickens on the island of Mauritius. Following the account which they have given, the disease is very contagious and frequently ends in death. It begins as an ordinary ophthalmia. The bird af-

feeted appears uneasy and scratches at its eyes, which become much inflamed and watery. The eyelids stick together and a white, cheesy matter, easily removed, gathers beneath them. At other times there is a complication of nasal catarrh, together with great inflammation and edema of the infraocular sinuses. In such cases the condition of the bird may be considered very serious. With its eyes almost always closed it remains in one place, eats but little

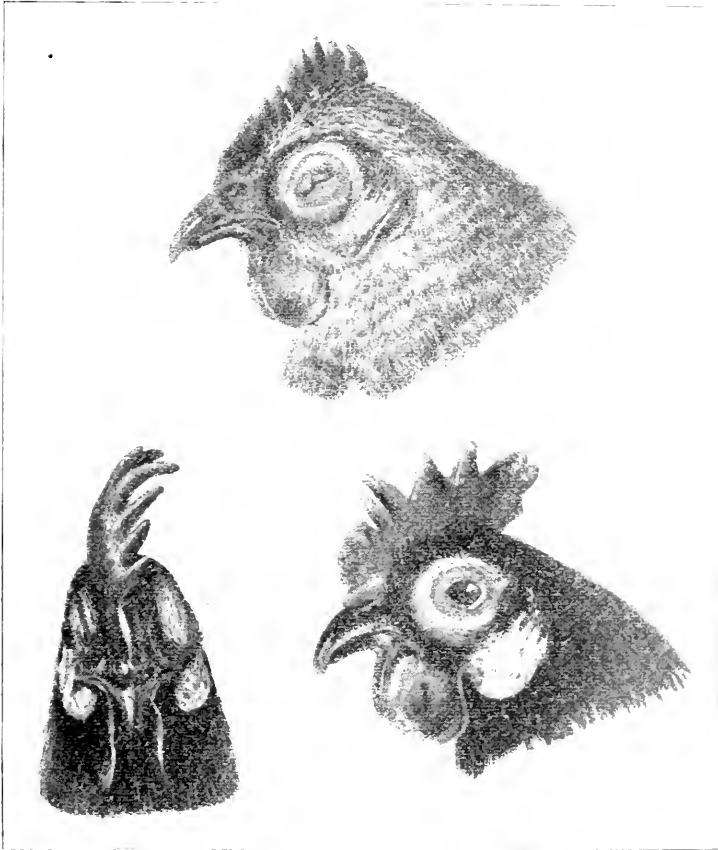


Fig. 7.—Heads of chickens affected with Manson's eye worm.

and with difficulty, becomes anemic, and dies in twenty to thirty days.

One of the fowls which had begun to show symptoms of the disease was isolated, and Dr. Emmerez observed the following:

"The trouble seemed to be confined to the eye itself, while the eyelids exhibited no inflammation, except that the nictitating membrane was slightly swollen and projected at the corner of the eye.

It was drawn rapidly and constantly across the eye, as if to remove some foreign body. When the membrane was lifted a large number of little white slender worms in active motion were seen beneath. Dr. Emmerez was able to remove them all, to the number of about 50.

"Treatment becomes very simple after the discovery of the worms. A solution of bicarbonate of soda is dropped in the eye several times a day. Under the influence of this treatment the worms come out from under the membrane, fall between and under the eyelids, and are carried outward with the tears. A fine cloth should be used to finally remove them, as they very quickly regain their position under the membrane. As an alternative, one may remove the worms with fine forceps and complete the treatment by bathing the eye with a warm 4 per cent. solution of boric acid.

"Taken at the start this affection offers nothing serious, but if allowed to become complicated with nasal catarrh it may prove fatal."

In addition to the above account, Mégnin gives a short zoological description with figures and proposes to name the worm *Spiroptera Emmerezii*, believing it to be a new species, but the description leaves no doubt as to its identity with the previously described *Filaria Mansoni*.

In 1901 and 1902 Mr. F. C. Clark collected numerous specimens at Laughlands, Jamaica, which are preserved in the helminthologic collection (Nos. 3182 and 3251) of the Bureau of Animal Industry, Department of Agriculture. The Bureau is under obligations to Mr. H. C. Niles, Key West, Fla., for supplying a number of chickens infected with this parasite.

Attention may here be called to the fact that so far the worm has been reported only from localities on or near the seacoast. This point may prove to be of significance in the life history or it may be only a coincidence, but in any case it is worthy of remark.

The worms are white, with the customary slender threadlike form of the nematodes, and are attenuated at both ends. The attenuation is greater toward the posterior end, which is pointed, while the anterior end is rounded (Fig. 1).

Males may be distinguished from females by their generally smaller size, and by the tail, which is curved ventrally (Fig. 1).

The life history of this parasite has not been determined. Its development is supposed to take place in water. No free eggs or embryos have been observed in the eye. Experiments have resulted negatively. Some marine forms or certain conditions peculiar to

the seashore seem necessary to enable the parasite to complete the cycle of its development.

In connection with the study of *Oxyuris* *Mansoni* it was found, so far as was possible to trace in the literature, that only one other nematode has been recorded parasitic in the eyes of birds in the United States. Taking the entire world, however, about 38 species, altogether, have been reported, collected from the eyes of about 43 different species of birds. It therefore seems very evident that a considerable number of species probably occur in the eyes of birds in the United States which have hitherto been overlooked, chiefly, it is presumed, on account of a lack of due attention by collectors of parasites to the eyes of animals examined. The fact that over half the known species are the result of the work of a single collector (Natterer) of South American birds would indicate that the eyes are much more frequently the location of nematode parasites than is commonly supposed.

Reports of Societies.

ASSOCIATION OF CLINICAL ASSISTANTS OF WILLS HOSPITAL.

The first regular meeting was held at Wills Hospital on Jan. 18, 1905, at 8:30 p. m. Dr. J. Hiland Dewey in the chair.

Dr. Stanley S. Smith read a report of a most interesting case of gumma of the iris and ciliary body occurring in the clinic of Dr. Charles A. Oliver. The case presented all of the characteristic symptoms of the condition, and was fast becoming well. Dr. Smith stated that it was very instructive to note the secondary rapid diminution of vision produced by haze in the media, which had been probably caused by a deposition of the gummy infiltrates into the chambers of the eye. In the discussion, Dr. John T. Krall commented upon the comparative painlessness of specific cyclitis and the character of the infiltration into the aqueous and vitreous which was chiefly composed of round cell exudates. In support of the belief of others that gummata of the ciliary body usually occur on the upper border of the cornea, he had seen but one in which the swelling was situated to the lower side.

The various methods of administering mercury were informally discussed, the consensus of opinion being in favor of the use of mercurial ointment by inunctions.

Dr. Josephine W. Hildrup read a paper upon 10 cases of interstitial keratitis, 9 of which had been studied in the clinic of Dr. Oliver, and the remaining one in her own clinic at the Woman's Hospital. The ages of the patients varied from 6 years to 58 years. The dyscrasia had been very carefully studied in all. Females had been preponderant in the series. With but one or two exceptions, all of the cases had passed on to resolution.

The discussion, which was quite informal, embraced the forms of treatment which were the most prevalent among the surgeons in the institution. Dr. James A. Kearney stated that he had seen much good from the use of inunctions of protoiodid of mercury. Dr. Dewey spoke favorably of the use of diamin, claiming that it had hastened resolution in a number of cases which he had seen. He had not had much experience with subconjunctival injections, and had seen some unfortunate results, such as conjunctival ulceration, giving rise to disfigurement from their use. Dr. Kearney

exhibited a case in which the right eye was being treated by the ordinary routine methods, supplementing these by subconjunctival injections of common salt solution in the left eye; the latter organ (although the first involved) seeming to grow well much more rapidly than its fellow. Dr. Krall stated that he had learned to share the opinion of others that if injections were made under the conjunctiva, their effects would be to produce a number of adhesions between the bulbar conjunctiva and Tenon's capsule, and stated that even though the injections were made into the capsule, their good results were but transitory, as adhesions were sure to occur. In other words, he, with many other authorities, believed that such injections did more harm than good.

Dr. Kearney presented a case of double pterygium from Dr. William Zentmayer's clinic, in which one eye had been operated on by the von Arlt method and the other by the McReynold. He exhibited a case of entropion of the upper lid, taken from the same clinic, in which a Hotz operation had been performed with little or no improvement, followed by a Jaesche-Arlt operation, which afforded a very satisfactory result. He also showed a case of entropion from the clinic of Dr. Frank Fisher in which the cilia had been transplanted and the tarsus removed, giving most excellent results. In the discussion, Dr. Krall was of the opinion that the McReynold operation had no advantage over the von Arlt. He believed that every case should be treated on its own merits, one method of operation not being applicable to all. Drs. Dewey, Milton A. Robinson and Smith cited several cases in which different plans of treatment had been most successfully applied.

BERLIN OPHTHALMOLOGICAL SOCIETY.

Meeting of Jan. 19, 1905.

President, Professor von Michel.

Dr. Braun shows a case with a congenital optico-ciliary vessel in both eyes; it communicates between the choroid and the central vein. There are only 3 cases on record. Dr. Braun describes at length each of these and shows pictures of them.

Dr. Roth shows an improvement on the keratoscope. The disc of a regular keratoscope has a wire string attached behind (like the string of a bow) as diameter. By pulling the string, the disc is bent and the image reflected on the cornea becomes elliptical. A graduated scale on empirical principles enables one to find out the degree of astigmatism. (The writer of this report would like to call attention to a new application of the keratoscope. Pa-

tients having astigmatism of some degrees can be shown their own astigmatism, at least partly, by holding a small mirror behind the other hole of the instrument.) Dr. Roth says that even a slight degree of astigmatism can be discovered, since the ellipses can be neutralized and more easily detected than by ordinary keratoscope; of course, his instrument is not meant to do away with the ophthalmometer.

Dr. Heinrichsdorff reported on disturbances of adaptation in hemeralopy and how ring scotomata are affected by it.

Dr. Schultz demonstrated macroscopic and microscopic alterations of the nervous system by a tumor of the brain and also a small sarcoma of the choroid.

The writer was unable to hear the last two articles, having been called away by a pressing engagement.

DR. E. H. OPPENHEIMER, Berlin.

Meeting Feb. 16, 1905.

Professor von Michel, President, in the chair.

Professor Hirschberg shows a case of iron extraction from the retina; vision was now $1/7$, the lens was not injured, although the piece of iron was 13 mm. long and weighed 52 mgr. Hirschberg believes this is only possible because he used his hand magnet and not Haab's large one.

Professor von Michel spoke on amyloid degeneration of the blood vessels of the eye. There are three forms of amyloid degeneration: 1. The formation of tumors in certain tissues, for example, the lids (tarsus). 2. Superficial deposits. 3. Diseases of the system by ferments in the blood. Amyloid has been produced experimentally in the cornea and was also found in old maculæ; it is not found in the cornea in general diseases. It has also been found after bleeding into the vitreous (Knapp), after injuries and phthisis of the eyeball. In universal amyloid . . . Schmidt discovered amyloid in the posterior ciliary arteries and nowhere else; his patients had Bright's disease (nephritis parenchym.). After recalling the methods of staining for amyloid, von Michel reported on his case: A girl of 18 with Bright's disease and a retinitis albumin. Ten hours before death had amyloid deposits in the walls of the central artery, the chorioecapillaris and the pia of the optic nerve; beside these there was an endarteritis proliferans. Microscopic and opidiascopic specimens of this case and others were shown.

Dr. Münch spoke on the innervation of the stroma cells of the

iris. According to the pictures he showed he found all kinds of ganglions and nerves regulating the muscular cells he had about a year ago reported on in this society.

Discussion.—Professor von Michel emphasized the fact that Dr. Münch had found ganglions, whereas others had never detected any.

Dr. Wessely explains the action of adrenalin in this way as nervous irritation, since adrenalin does not affect the sphincter.

Professor Greeff also remarks that some time ago a Russian author in his laboratory failed to find ganglions.

Dr. Gutmann remarks that Professor Schweigger was the first who discovered ganglions in the ciliary nerves.

DR. E. H. OPPENHEIMER, Berlin.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, Jan. 26, 1905.

John Tweedy, P.R.C.S., President, in the chair.

MALIGNANT DISEASE OF CONJUNCTIVA.

Dr. Freeland Fergus, in a paper read in the absence of the author by Dr. F. R. Hill (Carlisle), related a case of malignant disease of the conjunctiva. The patient was a girl, aged 9, who was sent to him by Dr. Hill in November, 1903. On the lower part of the bulbar conjunctiva were some sprouting vegetations, with an appearance not unlike that seen in spring catarrh. The limbus and palpebral conjunctiva were unaffected. It had first been noted six months previously. The vision was $\frac{6}{9}$, and a portion was removed for examination. The pathologic report was indefinite. Shortly after the rest was removed, and the patient was sent back to Carlisle under Dr. Hill's care. The pathologic reports of Professor Muir and Mr. Devereux Marshall showed the growth to be of an unusual character, but probably a sarcoma, but its appearance left no doubt as to its being malignant. On March 21, owing to its rapid extension, the whole contents of the orbit were removed, and the patient was sent back on April 14. On May 23 she was again seen, but the recurrence was so extensive that no operation was possible. The neighboring glands were also involved, and even at this time there were cerebral symptoms. The child died in October with the tumor of enormous size. The post-mortem examination showed extensive involvement of the brain. The growth was apparently a leucosarcoma.

Mr. Parsons, who had examined the growth, said it appeared to him to be one of those rare cases when some nevoid tissue takes on malignant growth, and he looked upon it as being probably an epithelial growth rather than a connective tissue one.

QUININ IN THE TREATMENT OF CORNEAL ULCERS.

Mr. Arnold Lawson read a paper on the treatment of corneal ulcers by quinin. He said that up to the present time the use of quinin in ophthalmology has been restricted to a very limited class of conjunctival and corneal affections, but his observations, which had extended over four years, showed that it was a very powerful curative agent in a large variety of corneal ulcers not amenable to ordinary routine treatment, to which much more drastic measures were commonly applied. The sulphate of quinin dissolved carefully in just sufficient sulphuric acid to hold the salt in solution was preferable to either the hydrochlorid or the acid sulphate, both of which were soluble in water; and it was recommended to be used in a 1 per cent. solution. The eyes should be soaked in the solution for five minutes four or five times a day, and in addition, a thorough irrigation daily by an undine filled with the solution was advised. It caused very little discomfort, and patients used it readily, but stronger solutions gave rise to pain, and had no advantage. When the treatment was going to be successful improvement showed itself within a few days, and if no manifest benefit was effected within a week it might be discontinued. The rapidity of healing under this treatment was at times remarkable, and the author had seen many formidable-looking ulcers heal by this treatment alone within a week. A list of several cases of corneal ulceration treated by this method within the last three years was appended to the paper.

THE NOTATION OF PRISMS.

Mr. Claud Worth read a paper on the notation of prisms. He said that when one ordered a spherical or cylindrical lens, one did not concern oneself with the refractive index of the glass of which it was made. One specified that it should have a certain definite effect upon a pencil of light, and bring it to a focus at a certain specified distance. But prisms were numbered by most opticians according to the geometrical angle, so that if one wanted a prism which should deflect a pencil of light, say 4 degrees, one had to order a prism of 8 degrees geometrical angle. The optician then supplied a prism whose actual deflecting power was somewhere between 3 degrees and 5 degrees, according to the kind of glass of which it was made. It was much more convenient and accurate to

number a prism according to the number of degrees which it deflected a pencil of light. Although this matter had been discussed before, yet he brought it forward in the hope that the society would make some definite pronouncement which would be accepted by spectacle makers in this country: much inconvenience would thus be avoided.

DETACHMENT OF RETINA.

Dr. D. J. Wood (Capetown), after referring to a case of detachment of the retina recorded by him in volume xii of the *Transactions*, described another case which he had recently seen which bore a strong likeness to the previous one. The patient was a bucolic Dutchman, aged 35, whose right eye had been lost five years before from perforating ulcer, and the eye had been removed. Since that time the sight of the left had been failing, but had rapidly deteriorated during the last five weeks. His vision was P. L., and could just see large objects moving below. The pupil was active, and the tension was normal. The ophthalmoscope showed two rounded detachments meeting and widening out above. The vitreous was clear, and one could just see below the disc, but the striking feature was the swelling and tortuosity of the vessels, and which at once recalled the former case to mind. The vessels were more than double their natural size, and were tortuous to a degree. Both arteries were constricted at frequent intervals, so that the arteries looked like beads, while the veins had the appearance of strings of sausages. The constricting bands were retinal in origin, and looked as if they were stitches holding the vessels down. In both cases it was difficult to follow the vessels, not only on account of the tortuosity, but also because the color of the arteries and veins was so similar. There were no recent hemorrhages, but some patches that were seen probably represented old ones. The question was whether it was a proliferation of inflammatory material in the retina or a primary disease of the vessels. Probably serous exudation caused detachment of the retina, but it was difficult to account for the lightness of color of the veins which was seen in both cases.

Mr. Louis Werner showed a sketch of a case of neuroretinitis of a severe type which occurred in one eye of an anemic girl, aged 24. There was neither headache nor vomiting, the only symptom being a feeling of lassitude and, for a time, excessive thirst. There was no albumin present, but the sugar reaction was doubtful. The left eye failed suddenly one morning, and the vision was reduced to hand movement. The field of vision was greatly contracted, but

the color perception was good. The upper part of the disc was greatly swollen, with large corkscrew-like vessels spreading out from it, while the lower part was white and atrophic but indistinct. In less than three days a perfect star of white lines appeared at the macula. Under iron the swelling disappeared in three months and the vision improved to 6/63. The author referred to a case reported by Gowers, in which retinal changes resembling those of albuminuric retinitis occurred in a chlorotic patient.

EXHIBITS.

Dr. L. Cole-Baker showed a needle holder for use with either straight or curved needles, and a modification of Clark's eye speculum. Mr. Bishop Harman showed a case in which there was congenital absence of the internal and external rectus muscles. Mr. Secker Walker showed a radiograph of a case of gunshot wound in which two shots had entered the eye at the same hole and had lodged at the back of the orbit. C. DEVEREUX MARSHALL.

AN OPHTHALMOLOGIST AT THE SEAT OF WAR.—A. Moltrecht writes from the front during October that typhoid cases are numerous notwithstanding the almost wintry weather. He has encountered a number of interesting bullet wounds of the eye, among them several in which the bullet traversed the orbit, nose and mouth, or else passed out along the roof of the orbit, without injuring the eyeball. In several cases the bullet had injured the optic nerve, but the subject recovered without permanent functional disturbances, which is certainly, he adds, the *ne plus ultra* of a "humane" bullet.—*Journal of the American Medical Association*.

THE paper of Dr. Hubbell of Buffalo on "Samuel Sharp, the First Surgeon to Make the Corneal Incision in Cataract Extraction with a Single Knife," which was presented to the Academy of Ophthalmology and Otology at its last meeting at Denver, Colo., and which was published in the October number of the *American Journal of Ophthalmology*, has been republished in the *Medical Library and Historical Journal*, Brooklyn, N. Y. In the republication other illustrations have been added, a few additions have been made to the text, and several minor errors have been corrected which were found to exist in the first publication.

Recent Books on Ophthalmology.

Under this heading THE OPHTHALMIC RECORD will give title-page notices of ophthalmic works sent in care of the publisher for that purpose.

The Ocular Circulation.—By J. HERBERT PARSONS, B.S., D.Sc. (Lond.), F.R.C.S. (Eng.). Demy 8vo. With 37 Illustrations. Price, 3/-. net. Bale, Sons & Danielsson, Ltd., Great Fichfield Street, London, England. 1903.

Elementary Ophthalmic Optics, including Ophthalmoscopy and Retinoscopy.—By J. HERBERT PARSONS, B.S., D.Sc. (Lond.) F.R.C.S. (Eng.). Demy 8vo. With 66 Illustrations. Price, 6/6. J. & A. Churchill, Publishers, 7 Great Marlborough Street, London, England. American Edition by Blakiston's Son & Co., Philadelphia.

Diseases of the Eye.—By L. WEBSTER FOX, A.M., M.D., Professor of Ophthalmology in the Medico-Chirurgical College of Philadelphia, Pa. Cloth, \$4.00; Half Leather, \$5.00. Sold only by subscription. 8. vo. Two Colored Plates and 296 Illustrations. 584 Pages. D. Appleton & Co., Publishers, 436 Fifth Avenue, New York, N. Y.

The Optical Dictionary.—By CHARLES HYATT WOOLF, F.R.P.S., Editor of "The Optician and Photographic Trades Review," etc. An Optical and Ophthalmological Glossary of English Terms. Symbols and Abbreviations, together with the English Equivalents of some French and German Terms. P. Blakiston's Son & Co., Publishers, 1012 Walnut Street, Philadelphia, Pa. 1904.

Hand-Book of the Anatomy and Diseases of the Eye and Ear.—For Students and Practitioners. By D. B. ST. JOHN ROOSA, M.D., LL.D., Professor of Diseases of the Eye and Ear in the New York Post-Graduate Medical School; formerly President of the New York Academy of Medicine, etc., and A. EDWARD DAVIS, A.M., M.D., Professor of Diseases of the Eye in the New York Post-Graduate Medical School; Fellow of the New York Academy of Medicine. 300 Pages, Square, 12mo. Price, Extra Cloth, \$1.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

Biographic Clinics.—Volume II. The origin of the ill health of George Eliot, George Henry Lewes, Wagner, Parkinau, Jane Welch Carlyle, Spencer, Whittier, Margaret Fuller Ossoli and Nietzsche. By GEORGE M. GOULD, M.D., Editor of *American Medicine*, author of "An Illustrated Dictionary of Medicine, Biology, Etc.," "Borderland Studies," "The Meaning and Method of Life," etc. P. Blakiston's Son & Co., Publishers, 1012 Walnut Street, Philadelphia, Pa. 1904.

Eye, Ear, Nose, and Throat Nursing.—By A. EDWARD DAVIS, A.M., M.D., Professor of Diseases of the Eye in the New York Post-Graduate Medical School and Hospital, and BEAMAN DOUGLASS, M.D., Professor of Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital. With 32 Illustrations. Pages xvi-318. Size, 5½x7½ inches. Extra Cloth. Price, \$1.25, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia.

Trachoma.—By DR. J. BOLDT. Translated by J. HERBERT PARSONS, D.Sc., F.R.C.S., Assistant Ophthalmic Surgeon University College Hospital; Curator Royal London Ophthalmic Hospital; and THOS. SNOWBALL, M.B., C.M., Burnley; with an Introductory Chapter by E. TREACHER COLLINS, F.R.C.S., Ophthalmic Surgeon Charing Cross Hospital; Surgeon Royal London Ophthalmic Hospital; Visiting Ophthalmic Surgeon to the Metropolitan Asylums Board's Ophthalmia Schools. Contents: Translator's Preface; Introductory Chapter; History and Epidemiology; Geographical Distribution; Symptoms and Course, Etiology; Diagnosis, Prognosis; Treatment; Prophylaxis; Bibliography. Published by Hodder & Stoughton, 25 Paternoster Row, London. \$3.00, net.

Notes and News.

THE annual stockholders' meeting of the Chicago Eye, Ear, Nose and Throat College was held February 10 at the college building. The annual reports showed a healthy growth in all departments. The old board of directors, Drs. W. A. Fisher, A. G. Wipperfurth, Thomas Faith, H. W. Woodruff and J. R. Hoffman, were unanimously re-elected. The meeting of the new board of directors followed immediately, at which the old officers, viz., Dr. W. A. Fisher, president and treasurer; A. G. Wipperfurth, vice-president; J. R. Hoffman, secretary, were re-elected.

GLAZED PAPER AND THE EYESIGHT.—Readers of books imported from England, says an exchange, must frequently have noticed the light weight of the volumes, caused by the quality of the paper used, which is made from Esparto. The publishers seen were asked why such paper was not utilized more generally by the makers of books printed in America. Several reasons were given, the most conclusive, perhaps, being one which contended that after extensive experiments, made about eight years ago, it had been found that the reading public generally desired the ordinary glazed paper. The lighter Esparto paper, many readers complained, was hard on the eyes, which is true, because the surface is not filled in thoroughly. That is to say, it is like a table top or other piece of furniture which lacks the two or three coats of varnish which will make it not only better to look at, but more even. One publisher declared that difficulty had been experienced with the union printers, who declined to use the new material for their work, as it had not been approved by their organization.—*Am. Medicine*.

A SIGN OF DEATH.—Dr. Icard has lately published a test of death which he regards as absolutely trustworthy. After the injection of a solution of fluorescein deeply into the cellular tissue, if circulation still goes on, intense jaundice of the skin and mucous membrane follows the absorption of that substance, while the eye becomes green, "like an emerald set in the orbit," to use the author's phrase. If the circulation has completely stopped, nothing of the kind is seen. When, therefore, after some time has elapsed from the time of the injection, none of these phenomena of coloration are seen, it may safely be concluded that death has occurred. A return to life would be manifested by renewal of circulation, and

this would automatically be followed by yellow staining of the skin and green coloration of the eye. In time of epidemic, Dr. Teard thinks it would be expedient, at least two hours before a body is placed in the coffin, to make a subcutaneous injection of fluorescein. If the person is dead, this causes no disfigurement; if he is alive, only a transient discoloration is produced.—*British Medical Journal*.

TRACHOMA IN LONDON.—It is reported that so great is the rush of Russian Jews arriving in London suffering from trachoma, that the hospitals are turning them away. A large number of these persons are en route to America, while others have been rejected by the United States immigrant inspectors, and having been returned by the steamship companies, are stranded in the United Kingdom instead of being sent back to Russia.—*Journal of the American Medical Association*.

DE PIETRO GRADENIGO, Professor of Ophthalmology and Director of the Ophthalmic Clinic in the University of Padua, died on Dec. 1, 1904. He held the title of Count, and was a descendant of an illustrious patrician family, which gave four Doges to Venice, and many members of which, up to the end of the Venetian Republic, held the highest political and administrative offices in the state. He was born in 1831, and received his preliminary education at Venice. When only 17 he served with distinction as a volunteer in the rising against Austria in 1848-49. He studied medicine at Padua, where he took his doctor's degree in 1855. After serving for some time in the Venice Hospital he became assistant in the Ophthalmic Clinic at Padua. Three years later he was appointed surgeon to the Venice Hospital, a post which he held for ten years. In 1873 he succeeded Gioppi in the Chair of Ophthalmology in the University of Padua. His contributions to the literature of his specialty have been gathered together in one volume, edited by his pupils, Ovis and Bonamico, which was published in the present year.

Gradenigo was one of the first in Italy to use the ophthalmoscope. Among the subjects to which he gave special attention were the treatment of corneal opacity, antiseptics of the eye, and the operative treatment of cataract. He devised a special thermometer and a stethoscope for use in investigating results of observations made by him with these instruments. He was a warm advocate of digital massage in various ocular affections, especially in detachment of the retina. His observations on massage of the globe were published in 1882.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, APRIL, 1905. VOL. XIV. No. 4. NEW SERIES

Original Articles.

DIFFUSE LEUCO-SARCOMA OF THE CHOROID.

RICHARD H. JOHNSTON, M.D.

Assistant Surgeon and Pathologist to the Presbyterian Eye, Ear and Throat
Hospital; Demonstrator of Laryngology in the University of
Maryland, School of Medicine.

BALTIMORE.

The great majority of sarcomata of the choroid are of the melanotic or pigmented variety. The pigment is usually present in great quantity as distinguished from the so-called leuco-sarcomata or non-pigmented form. The report of a case of the latter class of tumors is, therefore, justified. The growth to be described extended from the iris in front to the optic nerve behind, involving as a flat tumor nearly one-half of the eyeball. Diffuse sarcomata of the choroid involves practically the entire layer on both sides of the nerve. While my specimen did not cover so large an area, it was flat as opposed to the usual circumscribed form of such tumors and can be classed as diffuse. Sections were made through the eyeball and stained with hematoxylin and eosin.

With the low power the tumor can be seen extending forward as far as the ciliary process—a small fragment detaches itself from the main mass and passes into the anterior chamber, where it can be seen coursing along the outer surface of the iris and closing up entirely the irido-corneal angle. The tumor then passes backward with the pigmented layer of the choroid in front of it and terminates just in front of the optic nerve. There is practically no pigment in the tumor as compared with the usual pigmented neoplasms in the eye.

With the high power the cells are seen to be large and small, round and oval in character. No spindle cells are present. Through the specimen are connective tissue fibers, which in some places are so arranged as to give the appearance of an alveolar sarcoma.

At other points the connective tissue is very scarce and the cells are packed together in a homogeneous mass. The tumor may be described as a non-pigmented round-cell sarcoma. Such growths are rare. In 1873 Briere expressed the opinion that leuco-sarcomata arise from the capillary layer of the choroid, which normally is non-pigmented. In 1882 Fuchs claimed that all sarcomata had their origin in the deep layers of the choroid. Schieck has recently demonstrated that both forms can arise wherever connective tissue normally exists or in any layer of the choroid. The circumscribed form of tumor is the one usually met with. The shape is sharply circumscribed and the tumor projects for some distance into the interior of the eyeball. There can often be seen a distinct base, a thin neck and a head. In the diffuse or flat form the choroid in its entire extent or in great part is thickened up to about 6 mm. with the sarcomatous tissue, which adheres fast to the sclera. The inner surface is covered with the vitreous and the pigment epithelium. There are only 8 or 10 cases of the typical diffuse form on record. Though the above tumor did not involve the entire choroid, it was in form and shape a diffuse or flat sarcoma.

819 Park Avenue.

A PRACTICAL SYSTEM OF NEAR TEST TYPES.

DAVID W. WELLS, M.D.,

BOSTON.

In presenting these types to the profession the writer feels inclined to apologize for using the word "standard," since the relation to the generally recognized visual angle of five minutes has been entirely ignored.

For purposes of research it may be interesting to use such scientific near type as Thorington suggests, but in order to make the near test type of any value, as a means of estimating visual acuity, so many factors have to be considered that it has seemed to me impracticable.

The writer pleads guilty to having used near types principally for determining the punctum proximum and in estimating the correction for presbyopia. When the patient reading Jaeger "1" or Snellen "2" or Thorington's "0.50 D. — 8 cm." asks how this compares with the newspaper, one is not able to answer definitely, as the relative value is not apparent, and the only satisfactory answer had been trial of the newspaper itself.

This present card is designed to overcome this necessity. With

STANDARD TEST TYPES

Arranged by DR. WELLS

Diamond

1

Small Bible

The only accurate way to measure sight is by means of letters or carefully graded characters, viewed at a distance of twenty feet. Quite a variety of such cards have been devised by eminent oculists. Near test types are used to determine the patient's ability to see to read at the proper distance. Type as small as this is not in general use for books or papers, except where it is necessary to condense a great amount of reading matter into small space, like a pocket Bible. It is hoped that this card will be a great improvement on the somewhat arbitrary standards in use.

Nonpareil-Linotype

2

Newspaper

The names used by printers to designate the different sizes are adopted, and familiar examples given of the customary use of each. Spacing between types increases legibility, therefore, the "leading" has been made to conform with standard typography. Newspapers are usually printed in Nonpareil or Brevier.

Brevier-Linotype

3

Newspaper

This paragraph and the one before it are not set up from single types, but each line is one piece of metal called linotype. It is not as clear and easy to read as separate types of the same size, but it is here used to make this test equivalent to reading newspapers, in which use of linotype is common.

Long Primer

4

Text Books

Books should be printed on dull finished paper. It is very unfortunate that the publishers of text-books for high schools and colleges so frequently ignore this fact, in order to obtain a good impression of the illustrations, for which a glossy surface is needed.

Small Pica

5

Books

For prolonged use of the eyes the type should be several sizes larger than the smallest which can be read. The ordinary book is printed in small pica or pica, but in order to read this comfortably one should be able to read diamond size or at least nonpareil.

Pica

6

Books

In order to get a proper illumination one should sit with his back to the light. Objects are seen by the light which goes from the object to the eye, not from the eye to the object. This precaution is quite commonly neglected.

Great Primer

7

Children's Books

Children should be allowed to use only such books as are printed in large, clear type, and excessive reading forbidden.

the assistance of Mr. G. W. Simonds, of the publishing house of C. H. Simonds & Co., Boston, a selection has been made of types ordinarily used in papers, books and magazines, and the sizes specified. Although these names of the sizes are becoming obsolete with printers, it was thought best to continue their use, because the new system, "5 point," etc., has reference to the *body* and not the *face* of the type, and these two dimensions have not a uniform relation. The numbering is purely arbitrary and is intended to be used to call the patient's attention to a certain paragraph.

As a matter of record, and in reporting cases, the words "diamond," "brevier," etc., will always have a definite value.

Electros have been furnished to Globe Optical Co., Boston, E. B. Meyrowitz, New York, and Wall & Ochs, Philadelphia, from any of whom cards can be obtained.

THE DIFFICULTIES ATTENDING DIAGNOSIS OF ASEPTIC FOREIGN BODIES IN THE ORBIT.

NELSON MILES BLACK, M.D.

MILWAUKEE, WIS.

(Illustrated.)

The following case serves to illustrate several facts:

1. A foreign body of considerable size may gain entrance into the orbit, resulting in complete loss of vision and motion to the eye, with apparently no macroscopic traumatism to the globe or adnexa, and leaving no trace of wound of entrance.

2. The patient will be unaware of the existence of anything in the orbit, as, after recovering from the first sharp pain from the blow, there is little discomfort.

3. The eye usually is not seen by an ophthalmic surgeon until some time has elapsed and the patient discovers the eye is blind, or there is no let up of the symptoms.

4. When seen, the patient usually presents an eye only moderately inflamed, with more or less exophthalmos, generally some limitation of motion, little or no actual pain, vision diminished or lost, and a history of having received a blow on the eye from some flying object.

5. This class of cases, as a rule, are seen only in those coming from the rural districts.

6. The orbital tissue is particularly immune to infection, or

* Read before the Chicago Ophthalmological Society, April, 1905.

else the foreign bodies that gain entrance into the orbit outside of the crowded city districts are of a much less septic character.

On December 5, 1905, S. L., an old soldier, age 56, came into my bi-weekly clinic at Soldiers' Home, with the following history: While hunting in Northern Wisconsin on Nov. 30, 1905, he attempted to cross a ditch on a log, which broke, throwing him violently on right side and striking his face; at the same time something struck him on the right eye. There was little bleeding, no pain after recovery from effect of blow, but eye immediately swelled and lids closed. Flaxseed poultices and fresh lard were applied. The swelling and slight discomfort not being relieved after the third day, he applied to Soldiers' Home and was admitted.



Patient presented an eye in which there was complete ptosis, considerable exophthalmos and fold of injected conjunctiva presenting between lids, absolute immobility of globe, cornea clear, moist, but anesthetic, anterior chamber deep, pupil 4 mm. in diameter, no reaction to light or accommodation, no consensual reaction, vision, movement of hand and light perception only to temporal side, tension equal to other eye. There was a recently healed wound 7 mm. long, parallel with commissure, 3 mm. above upper lid margin, but close examination of underside of lid and cul-de-sac revealed no wound or scar. There was no ecchymosis about orbit and no secretion from cul-de-sac, and patient complained of no discomfort except an occasional feeling as though there was something in lower lid down and out; media clear and fundus apparently normal.

The case was diagnosed as contusion of bulb, with possible

hematoma of the orbit, giving rise to exophthalmos and causing other symptoms by pressure.

Hot borie compresses for one-half hour each three hours, followed three times daily by instillation of a 50 per cent. argyrol solution and compress bandages between treatments, was ordered, and kali iodid exhibited internally. Twenty-one days of this treatment produced no visible change in conditions. The *x*-ray was not tried, as the foreign body, if any existed, would have made no impression on the plate, it being wood. Permission was granted to make an exploratory excision to evacuate pus if there was any or to discover what kept up the exophthalmos. This was done Dec. 28, 1904, under chloroform anesthesia, and, with the assistance of Dr. Oscar Chrysler, surgeon to the Home, the orbit was entered through an incision made between the external and inferior recti, as the patient had occasionally complained of feeling something in the eye in this locality. Nothing could be felt by thorough probing, and no pus found, going as deep as apex of orbit. Entrance was again made between superior and external recti, with same result. We decided to abandon the attempt, believing there was nothing in the orbit, but upon palpation of upper lid close under orbital margin a slight elevation was discovered, which on forcible retraction of upper lid was found to be a small pustule. This was opened and about five drops of yellow pus evacuated, which on examination showed no bacteria, but plenty of polymorphonuclear leucocytes. Introducing a probe into the small sac with a little force, it passed into the orbit along the superior orbital plate, and denuded bone was felt; the opening was enlarged and a pair of forceps introduced, the blade opened and moved about, closed and withdrawn, bringing a small piece of wood, evidently detached from a larger piece. Repeated efforts succeeded in removing fragments which when placed together measured 22 mm. long and $7\frac{1}{2}$ mm. in diameter. There was no pus, little hemorrhage, and sinus was packed with piece of sterile gauze moistened in argyrol (50 per cent.) and eye bandaged. There was no reaction. Gauze was removed at first dressing in two days, and a noticeable diminution of the exophthalmos was observed. Hot compresses were then ordered and compress bandage. After four days, subconjunctival injections of 10 m. of a 5 per cent. solution of dionin were made once a week. (Four such injections were made.) February 17, 1905, the exophthalmos had almost disappeared, there was a slight movement of upper lid and of the globe in all directions; vision was still only light perception to temporal side. At this time a small ulcer of cornua was noticed downward

and inward; a very small piece of wood was removed from this spot, which immediately healed. On February 24 another piece of wood was removed from about the same locality, and ulcer immediately healed. At this date the lid could be elevated about one-third of normal, there was good excursion of globe in all directions except upwards, slight pupillary reaction was observed and movement of fingers could be distinguished to temple side at about $\frac{1}{2}$ m.

March 23, no exophthalmos, lid could be elevated about one-half way, motion of eye in all directions, but limited vertically and externally; cornea clear, pupil 2.5 mm., no movement of iris except consensually, media clear, fundus normal except complete optic nerve atrophy, eye blind. The limited movement up, down and out is undoubtedly due to the adhesions and cicatricial contraction following operative procedure in removing wood. Why there was a slight return of vision after removal of the foreign body, followed by complete blindness, I do not know, unless the relief of pressure and tension on optic nerve, due to removal of foreign body, and the lessened exophthalmos relieved conditions for a time, after which the atrophy proceeded, or possibly the additional trauma to the nerve in removing the body hastened the atrophy.

The question arises, is the result obtained at this date, i. e., a blind but normal looking eye, somewhat limited in movement up, down and out, partial ptosis (which may be helped by electricity, etc.) sufficiently satisfactory for the amount of time lost in the treatment? In this case the patient was at absolutely no expense, except his loss of time. This item (ninety days) would mean a great deal to the majority of men in whom this class of cases is found.

Immediate enucleation would have shortened this time very greatly, but would it have been justifiable?

THE PATHOLOGY OF PTERYGIUM.

RICHARD H. JOHNSTON, M.D.

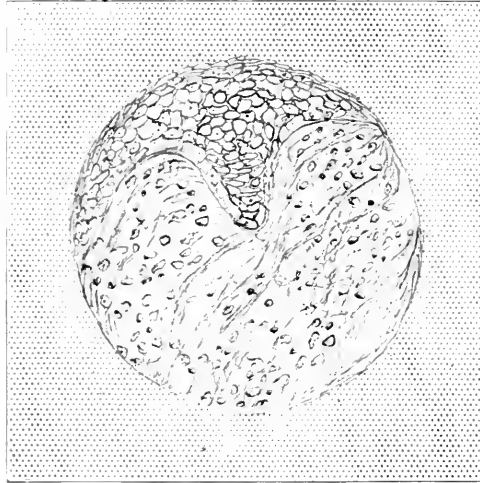
Assistant Surgeon and Pathologist to the Presbyterian Eye, Ear and Throat Hospital; Demonstrator of Laryngology in the University of Maryland, School of Medicine.

BALTIMORE.

(Illustrated.)

Fuchs claims that pterygium always arises from a pinguecula, which undergoes degeneration and pushes itself, as it were, over the cornea, carrying the conjunctiva with it. Another view of the origin of the growth is that it follows an ulceration at the margin

of the cornea. Fuchs' opinion has been disputed by Knapp, Savage and others. De Schweinitz claims that the growth sometimes, though rarely, arises from the conjunctiva above and below the cornea, which would seem to prove that the presence of pinguecula is not necessary for the development of the tissue. In most text-books we find very brief accounts of the microscopic findings in this form of tumor. Thus, in Ball's latest work we are informed that "histologic examination shows that a pterygium is simply an hypertrophy of the conjunctiva which involves the epithelial and anterior elastic layers of the cornea." In an experience of nearly three years as pathologist to a large special hospital, I have secured one large pterygium, which allowed a thorough microscopic exami-



Section of Pterygium, Author's Specimen.

nation. Since a careful description of the different tissues entering into its formation is not to be found in any book with which I am acquainted, I take the liberty of reporting this case. The tissue was hardened in alcohol and the sections stained in hematoxylin and eosin.

With the low power the specimen is seen to be made up essentially of a thin epithelial layer covering a thick mass of connective tissue. At the base of the growth there is a blood clot which evidently remained from the incision for its removal. At certain points in the section are small areas of blood probably corresponding to vessels which have been cut across with the microtome. The epithelial layer varies in thickness—at one point it sends a cone-shaped process downwards into the connective tissue and at another

a thick mass, giving off processes like the fingers of a glove, can be seen. Near the epithelium in the connective tissue are small dots, evidently cells, the character of which can not be made out with the low power.

With the high power the epithelium can be divided into three distinct layers. The outer layer is decidedly flat, with nuclei not distinct or wanting—the protoplasm takes the stain poorly. Passing inward the cells become more or less oval in character, with round or oval nuclei. Next to the connective tissue the cells become cylindrical, with elongated, deeply-staining nuclei. The connective tissue is made up of rather loose fibers, running vertically, horizontally and obliquely. The small dots seen in this tissue with the low power can now be distinguished as small mononuclear leucocytes, showing an inflammation of the parts. Towards the base the leucocytic infiltration is not so pronounced. The blood vessels filled with red cells are better seen with the high power. No glandular or cyst formation is present in the section, as has been reported in some cases. The section presents a similarity to the sections of vernal catarrh examined by me and reported in the *OPHTHALMIC RECORD* for April, 1904. In the specimen of pterygium the epithelium is not as thick and the epithelial processes are not as numerous and do not extend as far down in the connective tissue as in vernal catarrh. The section shows an hypertrophy of the epithelial and connective tissue layers of the conjunctiva.

819 Park Avenue.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, APRIL, 1905. VOL. XIV. No. 4. NEW SERIES

Editorials.

OPHTHALMIC TRAINING IN THE MEDICAL SCHOOL.

It has only been during recent years that the medical student has been required to pass a final examination in ophthalmology. Some schools, even now, do not require it, but most of them do. As the subject is now taught, the student at graduation has a fair working knowledge of diseases of the eye. He is familiar with the principles of refraction as well as their application in the management of ametropia, and he has a still greater knowledge of the symptomatology of ametropia. It is not the endeavor of most teachers of ophthalmology to teach refraction during a medical course in a manner that will enable their graduates to start in at once doing refraction work. I am not sure, however, that the beginner in this department would make more serious mistakes than the beginner in the general treatment of disease. Postgraduate work is essential for a better knowledge of either.

Dr. Edward Jackson, in his address before the Academy of Ophthalmology and Oto-Laryngology last August,¹ advanced the argument that the medical student who proposes making ophthalmology his life work should not be required to take the entire course now demanded by the medical school; that certain branches are not needful to the ophthalmologist, and the time now spent in their study should be devoted to special training for ophthalmology. A few years ago such doctrine as this would have met with the most violent opposition from within our own ranks. It was believed that it was a mistake to take up ophthalmology as a specialty until several years had been spent, after graduation, in general practice. Otherwise the specialist would be too narrow, and would soon believe that all the ills of mankind could be treated from an ophthalmological point of view.

1. The American Journal of Ophthalmology, November, 1904.

Jackson leads us to believe that the younger the man is when he takes up ophthalmology the better, because his mind is then more plastic and better fitted to receive the scientific training needful to a well-rounded ophthalmologist. This is unquestionably true. The question is, How are we as ophthalmologists to bring this about? Would it be advisable for us to induce the medical schools to change their curriculum so that students who expect to become ophthalmologists can be so favored? This is a question that requires most careful consideration. We certainly do not care to become divorced from the profession of medicine. If students thus favored took an ophthalmological rather than a medical degree they would be placed, in a measure, outside the medical profession and would be sidetracked into a profession of their own. Certainly the degree of M.D. could not be conferred upon these men unless the full medical course had been taken.

I fully agree with Doctor Jackson that it would be an advantage to ophthalmology to have its future members specially trained while young. The theory is ideal, but practically I do not see how our medical schools can undertake to do it. MELVILLE BLACK.

WHY STRADDLE THE FENCE?

A recent editorial in this journal is entitled, "The Optician and the Medical Profession." Let us consider this time the subject mulewise, backwards, i. e., "The Medical Profession and the Optician."

Accordingly, reverse the statement, "existing conditions will not admit of any radical views either way," and we have: "either way, radical views will not admit of existing conditions," and, presto! we are off the fence—on the right side of it, I believe, too.

Surely the only practical solution of the question is not to "let the question stand;" that is to again straddle the rails. For, we *can* say "the optician must not examine the eyes for errors of refraction," and we *must* appeal everlastingly to the family doctor, if he needs jogging, until that big, good-natured boy, the public, discovers what a credulous ass he is. The prescribing optician—beg pardon—the Optometro-Optico-Cycloidal-Prescriber, may, like the psalmist's heathen, "rage furiously." Let him.

The suggestion that "no person can legally advise, sell or give away glasses, either refractive or prismatic, to any person whose visual acuity is below normal, i. e., below 20/20, or that can be made normal by the aid of glasses, except those legally authorized to treat pathologic conditions and to take the full responsibility for

the same," looks safe and as if we were again off the fence, but, alas! what is to become, then, of the unfortunates who, having 20-20 central vision, unhappily are unaware that they have simple glaucoma, tabes with beginning optic atrophy, or albuminuric or diabetic retinitis, etc., and who stumble into the luxurious parlors of the Optometro-Optico-Cycloldal-Prescriber? Most impressive within is the array of instruments devised by the humble oculist and loaded and fired by the newly incubated O. O. C. P., and dire are the consequences!

No. Our best plan seems to be to appeal to the general practitioner, and, above all, to him in his ever-honored office as the family friend and counselor. Through him, if he be worthy of his high privileges, we can gradually though slowly educate the public that it is in its defense we fight the prescribing optician. Public opinion is the first and last court of appeal; its enlightened action will alone "solve the problem."

F. B. EATON.

ON THE LIMITATIONS OF ULTRA-MICROSCOPY IN BACTERIOLOGY.

Apropos of the somewhat sensational article of Raehlmann on "The Study of Sympathetic Ophthalmia by Ultra-Microscopic Methods," a review of which appeared in the September number of the Record, the following declaration of Loeffler¹ is of interest. After describing the apparatus of Seidentopf and Zsigmondy, the essential feature of which is the production of an intensely illuminated field with a dark background, he says: "The picture is always the same, whatever the nature of the particles. Every material light-reflecting particle appears as the same picture. It is, therefore, quite impossible to say anything positive about the nature of certain particles suspended in a fluid. This difficulty becomes especially apparent when it is a question of deciding, for instance, whether luminous particles which appear in the lymph of an animal affected with mouth and hoof disease, which after filtration through a Berkefeld filter appears entirely free from micro-organisms, when examined by ordinary microscopic methods, are really the hypothetical minute organisms of this disease or are merely bits of broken down cells or possibly particles from the material of the filter. * * * In deciding this point we have only the form and the motion of the particles to aid us, but these offer no certain characteristics, since we do not know how these substances appear and the lively movement of the particles

1. Deutsch. med. Wochenschrift, 7, 1905, Vereinbeilage.

can also be observed in solutions of the metals. The decision as to whether the particles are specific or accidental is, therefore, immensely difficult and uncertain or, indeed, impossible. On the other hand, if one finds in a fluid no luminous points, this by no means makes it certain that no germs are present. Many things, for instance, the motile organs of living bacteria, although not ultra-microscopic in size, can not be seen by the ultra-microscopic method, since they have the same index of refraction as the fluids in which they are found, and, hence, reflect no light. If, therefore, any of the ultra-microscopic particles behave as do these flagellæ, the ultra-microscope will not reveal them. For all these reasons, therefore, it is doubtful whether with the ultra-microscope we shall make any decided progress in our knowledge of the germs which are too small to be seen by the ordinary microscope. The hope expressed by Raehlmann that by the ultra-microscope new light will be thrown into many regions of microscopic anatomy and biology, I am unable to entertain. For the physics of the solutions of chemical substances the new apparatus will unquestionably be of great service; but not, I am afraid, for micro-biology."

H. GIFFORD.

Correspondence.

THE OPTICIAN AND THE OCULIST.

To the Editors: The conservative view offered by Dr. Valk in the February issue of the OPTHALMIC RECORD would seem to indicate that the present condition of affairs concerning the relation of the public to the optician and oculist should remain as it is. Also the ultimate decision as to where the public shall best secure their optical necessities be the result of the efforts of the optician, or from education as to the difference between an optician and an oculist.

The writer can not agree that the only practical solution of the question is to let it stand as it is to-day, for there is hardly a day passes that some one will ask the writer the difference, and also why the public is not better informed on these subjects. They can not be answered satisfactorily and with truth until there is more specific declaration of what constitutes the practice of medicine.

Some of the state laws are explicit as to the treatment of any bodily disease or infirmity by the use of any means as a drug or mechanism which will produce a certain physiologic effect. The present amendment bill before the Michigan State Legislature is the most direct in its meaning. It contains the following: "Any person shall be regarded as practicing medicine within the meaning of this act who shall operate on, profess to heal, or prescribe for or otherwise treat any physical or mental ailment of another." This indicates a responsibility which the state and public do not hold toward the optician, for the proper application of glasses is a part of the practice of medicine. They produce a certain physiologic effect which may be used as a cure, or if wrongly used may cause a certain disease.

Dr. Valk would suggest a minimum visual ability whereby persons applying to the optician may be given glasses, and places it at 20/20 or normal acuity. To this I would add a limit to presbyopia, otherwise the high hyperopic or astigmatic person having excessive accommodative power would come in the emmetropic class and go to the optician, while his brother with a slight myopia would have to go to the oculist.

The popular commercial methods followed by the optician alone should be convincing that the system is without proper justification. Where is the optician who will accept the correction of another optician as proper and satisfactory? Less readily would you

find an oculist who would accept the findings of an optician. The medical profession has had convincing proof that proper refraction can be done only with a cycloplegic, and which should be used by none other than the medical man, although cycloplegia is resorted to by some opticians. The writer was a witness in a suit brought against an optician for using "drops" (through a technicality the plaintiff losing), and has satisfactory proof that this is still going on.

There is no specific statement as to the present practice of ophthalmology, and who should or is fitted to properly treat the eyes and prescribe glasses. This matter should certainly be decided with due care and consideration by the state, and laws formulated to be carried out.

It is not the street fakir who does the most damage, but it is the polished fellow with the "D.O.," "Dr." or "Prof." and numerous imitation diplomas secured from mail courses, so-called optical colleges and the like. The public can not be else than misled when confronted by mail containing deluding statements as to the various eye troubles and their easy cure by coming to the "Dr." or "Prof." A glance at any newspaper will evidence the subtle methods adopted by this class of people to keep up their trade.

The statement of the optician that the medical profession would have a monopoly on the spectacle business and use it to the detriment of the public if the optician were more limited in his work is so much rot. Is there a profession, or trade also one may ask, in which there is the keen competition we find in the medical profession? This same competition would be the means of the public receiving better results, for the great aim of the medical man (and which is his very best advertisement) is to give the best his ability can produce. It will then be a survival of the fittest, not because of high-sounding names, the personal impression and the like, but a high standard which will finally result in a general improvement in the eyesight of people, so that by interbreeding vision will have a tendency to improve and the human eye be better able to stand the excessive strain our modern ways have subjected it to.

The harangues and tirades made upon the medical profession by some of the opticians would lead one to believe the discussion on the part of the medical man is intended as a personal attack on the present system and methods of the optician, but this is not the case, for the medical profession is open to the better class optician that he may see from a medical standpoint why people's eyes are more safe in the hands of one educated in medicine besides that of optics. Very truly,

PALMER J. KRESS.

Reviews.

STREPTOTHRIX ULCER OF THE CORNEA.

BY PROF. D. DE BERARDINIS.

[Reviewed by W. D. Hall, M.D.]

It has become so habitual to consider some one of the commoner forms of bacterial life as causing ulcers of the cornea that it frequently seems to have been forgotten that other forms with which we are less familiar may exert just as powerful an influence in the production of this dangerous corneal process. Prof. D. De Berardinis has quite recently in the *Annali di Ottalmologia*, 1904, Nos. 5 and 12, very logically presented his reasons for believing that the streptothrix should likewise be recognized as a probable cause. While examining a form of streptothrix which Prof. Giaxa had isolated from the discharge of a pulmonary abscess he was struck by the close resemblance it bore to certain micrococci, either singly or in chains, that he had frequently met with while studying the bacteriology of ulcers of the cornea, and which up to that time he had considered as unimportant. He, therefore, undertook to study not only the action that this particular form of streptothrix exerted upon the eyes of rabbits, but also to identify such forms of cocci as he was accustomed to observe in corneal ulcers generally. That he has been successful in producing, by streptothrix inoculation, an ulcer typical of one often observed clinically, and has been able to isolate forms of streptothrix from material obtained from corneal ulcers is interesting and important, because up to this time ophthalmological literature is silent on this point and thus far only mentions observations of Von Graefe, Foester and others which refer to its development on the conjunctiva and along the tear passages.

The form of streptothrix he has used in animal experimentation corresponds biologically and structurally to one that has been described by Dr. di Donna as growing well in bouillon, taking on, at ordinary room temperature, a delicate yellowish color and developing well in glycerinized bouillon such as is used in the cultivation of the tuberculosis bacillus. The addition of glucose aids in the development, but somewhat shortens the life. Grayish white colonies appear upon gelatin which does not liquefy. By the microscope are seen chains, some of them quite long, and in the older cultures masses of granules and short ramifying filaments. Bouillon

and agar cultures, when introduced into the conjunctival sac, seemed to be unable to excite very great reaction, unless preceded by scarification of the fornix, in which case old cultures simply excite merely a mild conjunctivitis, while one of greater virulence may cause death within twenty-four hours from general systemic intoxication with but slight local reaction. Twenty hours after a superficial corneal puncture there will be noticed mucus secretion, moderate injection, and, at the site of the puncture, small, round, well-defined, superficial grayish infiltrations, about one mm. in diameter, showing a tendency to coalesce until they form a single whitish slightly elevated plaque, surrounded by a grayish, somewhat striated zone. About this time the aqueous becomes turbid, the iris discolored and the pupil less reactive to light. This period, which usually lasts about two days, is followed by another characterized by a considerable increase in the severity of the symptoms and, at the site of the puncture, by a loss of substance with grayish base and margins. The cornea finally becomes so cloudy as to partially obscure the iris and the hypopyon in process of formation. As the inflammatory reaction diminishes and the necrotic area is eliminated a separate process is established, with the formation of a more or less extensive leucoma. When the culture is brought more intimately in contact with corneal tissue, either by incision or by means of the Pravaz syringe, the onset becomes much more rapid and is attended by great redness, profuse mucopurulent secretion, and along the track of the wound, an extensive infiltration, which has a tendency to rapid extension. The loss of substance is rather in depth than along the surface and therefore may go on to actual perforation. An exudate is found to be deposited upon the anterior surface of the iris and may even extend along the posterior surface of the cornea. There is, of course, hypopyon. If perforation takes place the iris usually becomes involved in the more or less extensive leucoma. Pure cultures taken from the secretion of one of these experimental ulcers, or even the secretion itself, have in most instances, when transferred to other rabbits' cornea, provoked a characteristic ulcerative keratitis.

When examined microscopically, the findings vary according to the method of producing the ulcer, the virulence of the contagium, and the stage of the process. On the day following simple corneal puncture there is noticed an interruption of the epithelium and the membrane of Bowman, separation and swelling of the superficial corneal lamelli, small round cell infiltration and exuberant development of colonies of micro-organisms. Otherwise the cornea

shows but little alteration until after two or three days, when a more or less extensive loss of substance appears, the base and margins being densely infiltrated with round cells, deeply stained. Later on, when the inflammatory process has been unusually severe, a greater part of the corneal tissue may become so infiltrated as to mask details. A few round cells may be noticed as entangled in the meshes of a fibrinous exudate in the anterior chamber. This exudate is to be found upon the iris and ciliary body, which in turn show pigment disturbances, cell infiltration and congested vessels. The bacteria which develop rapidly stain readily by the ordinary anilin colors and are especially receptive to the method of Gram. The bacteria developing early at the site of inoculation, after being displaced by cell infiltration, invade the surrounding and underlying parts until finally they reach the periphery of the cornea and the membrane of Descemet, leaving in their track cell infiltration and necrosis, at least such is the interpretation of appearances observed by the author, although it is not exactly in harmony with the opinions of other investigators who are working along on similar lines.

These experimental ulcers, however severe their course may be, rarely result in panophthalmitis and it is surprising to note the comparative insignificance of a leucoma when perforation, even, has taken place. When one considers how widely the streptothrix is diffused in the earth, in dust and cereals, as has been shown by Sanfelice,¹ Bellisari,² and others, and likewise the possibility that with hypopyon, the results obtained by examining the ulcers of the cornea in man which clinically, bacteriologically and experimentally have many points in common with corneal ulcers artificially produced in animals by this agent are, to say the least, interesting. Both of these ulcers were the result of trauma, one following a corneal erosion caused by a bit of wheat straw, the other resulting from corneal puncture by an umbrella rib. Both were attended by great pain, mucopurulent secretion, increased tension hypopyon and, in the latter instance, by chemosis and panophthalmitis. The course of the other ulcer was more favorable, as it healed quickly, there being only an insignificant leucoma. Agar and gelatin cultures obtained from these ulcers appeared as superficial, slightly raised colonies, with regular outline, and were of a yellowish color. The abundant growth in bouillon was somewhat inhibited when glucose was added. Upon potato the growth was scanty. Very characteristic filaments were obtained by grow-

1. *Centralblatt für Bakt.*, June, 1904.

2. *Annali d'Igiene Sperimentale*, 1904.

ing upon horse serum. Under the microscope agar and bouillon colonies were seen to be made up of diplococci, arranged either in masses or as an enlacement of chains and by passing through the ordinary media and animals a polymorphism was found to extend even to the bacillus. They stain well by the method of Gram and the ordinary analins.

With the idea of determining the general and local virulence, a small quantity of a bouillon culture from each ulcer, when introduced into the pleural cavity of two rabbits, caused death of one animal within twenty-four hours. The other rabbit, which had been inoculated by the culture derived from the uncomplicated ulcer, showed but little evidence of systemic disturbance. The effect upon the conjunctiva, unless there had been a previous scarification, was practically nil. Its effect upon the cornea depended altogether upon the method of inoculation employed (whether by simple puncture or by implantation or by injection), varying from slight redness, scanty secretion, a discrete ulcer and insignificant leucoma to a severe hypopyon keratitis, corneal necrosis, perforation and involvement of the iris in the resulting cicatrix. Microscopically, sections of the cornea, which had gone on to panophthalmitis, closely resembled sections of corneæ upon which ulcers of corresponding severity had been produced experimentally by known cultures of streptothrix. There existed the same swelling of the lamelli, interlamellar space formation and round-cell infiltration. It may be considered as reasonably certain that it is possible to produce corneal ulcers artificially by inoculation of streptothrix cultures and in certain corneal ulcers there are found micro-organisms which have characteristics, cultural and biologic, resembling the streptothrix and which can produce by inoculation an ulcer of the cornea having clinical, anatomical, bacteriological and experimental characteristics in harmony with those possessed by an artificially induced streptothrix corneal ulcer.

ON IRRIGATION OF THE ANTERIOR CHAMBER IN THE OPERATION OF EXTRACTION.¹

BY FELIX LAGRANGE.

[Reviewed by Charles H. Beard, M.D.]

These writers affirm that the reason irrigation has not "yet" taken rank among the classic, and, in a sense, obligatory maneuvers in a determinate number of instances, is partly because so many have never tried it and do not know its advantages, and

1. Archives d'Ophthalmologie, February, 1905.

partly because so many others, having practiced it, have renounced it on account of defects of instruments, of technic, and of the liquid employed. They think the procedure deserves better and believe in its future provided two principles are adhered to, viz.: An instrument for simultaneous injection and aspiration, and a liquid as like as can be to the normal aqueous.

Such an instrument was adopted by Chibret in 1895, and it is a modification of this that these gentlemen offer.

There follows a brief history of lavage, and the implements for its accomplishment, *in which occurs the name of but one English-speaking surgeon, MacKeown.*

Before the invention of Chibret the instruments are divided into three groups:

1. Those with reservoir, for gravity injection, like those of Inoue (Japan), Vacher, Gayet and MacKeown (his latest).

2. Bulb injectors, like those of Wicherkiewicz and Terson. To these also belong the improvised eye-droppers.

3. Those based on the principle of the ordinary piston syringe, such as were used by Forenze and Panas.

All of these are deemed open to serious objections. In this connection Panas is quoted as saying, in 1895, that he was absolutely opposed to injection as a means of evacuating cataract remains, for it only served to hold them back. And DeWecker thus: "The syringe for irrigation of the anterior chamber is a pernicious instrument, for, after the injection of a few drops of solution, the liquid in the anterior chamber forms a tampon, and to proceed further requires strong pressure, which may produce disastrous results." It is here modestly asserted that the instrument of Chibret (as modified) should forever supersede all the other appliances referred to.

The fact that the introduction of the Chibret syringe and "the demonstration of its manifest superiority" did not rally to the support of intraocular irrigation a greater number of converts was because the liquid employed consisted of antiseptic solution; that so great was the infatuation for intraocular antisepsis at this epoch that operators did not hesitate to introduce extremely irritating solutions. Brief mention is then made of the various kinds of liquid that had been used.

The syringe in question is about the size of that which goes by the name of Anel. The nozzle, or canula, is double-barreled, one barrel connected with the cylinder of the syringe below the piston-head, the other by way of a tube running on the outside communicating with the cylinder above the piston-head. Thus the down-

ward progress of the piston both injects and sucks back. Then, as to the solution. Saline solutions, whether stronger or weaker, exert an objectionable osmotic action on the elements of the cornea, hyaloid and iris. One hypertonic extracts the water from the cells, while one hypotonic causes swelling and infiltration. It is only an artificial aqueous that is neutral in its effects—that is isotonic.

In the composition of the “artificial aqueous” utilized no account is taken of the albuminoids nor of the extractive matter contained in natural aqueous, but it is made up as follows: Water 1,000 grams; chlorid of sodium, 6.890 grams; chlorid of calcium, 0.113; sulphate of potas., 0.221.

The cases of cataract with respect to lavage are classed as follows:

1. Those in which it is indispensable.
2. Those in which it is useful.
3. Those in which it is useless.

To the first belong the remnants of swollen, recent traumatic, glutinous (opaque and transparent remains) and immature senile—or about 15 in every 100 cases.

To the second belong the semi-soft, those attended with hemorrhage in the anterior chamber, the milky cataracts of young subjects, and accompanying extraction in high myopia. Those would be readily absorbed, but it is well to get rid of them at once.

To the third, by far the most numerous class, belong the sclerotic lenses and all others when the extraction is thought to be complete, leaving a perfectly clear, black pupil.

The measure is contraindicated when one has to do with an in-doeile patient or glaucomatous tension and in all cases when it is necessary to terminate the operation as quickly as possible.

The present reviewer has had but little experience with irrigation after extraction, but has for 18 years watched closely its results as practiced by others. These, as regards the ultimate fate of the eye and vision, have never seemed to be quite as good, all things else being equal, as those obtained without such intervention; though, as a means of instantly ridding the eye of cortical remains and blood, irrigation is unquestionably effective. Wherein the particular instrument under discussion possesses any advantages over that of Lippincott, of Pittsburg, for example, it is difficult to conceive. That the injected liquid can tampon the anterior chamber while the corneal wound is being held freely open, as with Lippincott's canula, is out of the question. It is much easier to conceive of a plugging, by lens remnants, of the tiny aspirating

tube of this French syringe, thus interfering seriously with its working and entailing, perhaps, the very resort to undue force that its authors condemn. Moreover, in actual use, every emptying of the injected solution means a corresponding filling of the cylinder with the contaminated liquid from the eye, rendering the instrument unfit for further use either in the same eye or another one without first re-disinfecting. Then, too, the manipulation of a piston syringe is manifestly more awkward (hence less accurate) than is that of an irrigator held penholder fashion. And, as concerns the force of the stream, certainly no one will deny that this can be more definitely regulated by the height of the Lippincott reservoir than, as in case of the syringe, by the fingers of the average operator.

The causes that prevented the Chibret syringe from jumping at once into popularity, as given in the Bardeaux article, are interesting. The liquid employed was antiseptic and irritating, or it excited active osmosis. Now, at the time the instrument was brought forward (1895) the "infatuation for intraocular antiseptics" no longer existed, and many surgeons had, in the hundred years since washing out the anterior chamber had been practiced, employed either non-irritating substances, such as pure water, boric acid, etc., or imitations of physiologic salt solution. Is it not singular that the addition of a suspicion of chlorid of calcium and sulphate of potassium should give to the ordinary salt solution just those essential isotonic properties?

I. A FURTHER CONTRIBUTION TO OUR KNOWLEDGE OF LEPROSY OF THE EYE.

BY DRS. E. FRANKE AND E. DELBANCO.¹

II. THE FAILURES OF INTRAOCULAR DISINFECTION WITH IODOFORM.

BY DR. PAUL COHN.²

III. A WARNING AGAINST THE UNRESTRICTED USE OF ADRENALIN IN GLAUCOMA.

BY DR. A. SENN.³

[Reviewed by Robert L. Randolph, M.D.]

I.

Our knowledge of the ocular complications of leprosy is necessarily scant, and consists for the most part of clinical and ana-

1. von Graefe's Archiv für Ophthalmologie, vol. lix, No. 3.

2. Zeitschrift für Augenheilkunde, January, 1905.

3. Wochenschrift für Therapie und Hygiene des Auges. Jan. 26, 1905.

tomical studies of changes in the external parts of the eye, from which investigations one might conclude that the eye is attacked by an infection which starts in the conjunctiva; in other words, by infection from without. The observations, however, of Franke and Delbanco lead one to believe that the infection, as a rule, is an endogenous one. The anatomical changes, according to these observers, are found especially marked in the vicinity of the filtration angle or root of the iris. The ciliary body is densely infiltrated and occasionally bacilli are found, and the latter are especially numerous at the root of the iris near the bigger vessels. The changes markedly diminish in degree towards the cornea, so that the latter can be regarded as practically normal. It would seem, then, that the region of the filtration angle should be looked upon as the actual port of entrance for the bacilli, and from this point they spread either back into the ciliary body or forward into the sclera and cornea.

This opinion is strengthened by several observations made on individuals who were under treatment for leprosy in Unna's clinic. In one case the patient had made absolutely no complaint of his vision, or, in fact, of there being anything wrong with his eyes; but an examination showed a well-marked leprous keratitis, punctate in character, and very deep-seated. The conjunctiva showed no changes. A small piece of the conjunctiva was snipped off at the corneal border and subjected to microscopic examination. Bacilli were found deeply imbedded in these pieces and considerable small-cell infiltration was present. The overlying epithelium was intact. The peculiar changes strongly suggest that the process did not make its way from without in, but in just the opposite direction. In another case seen in the same clinic the changes were practically identical with those just described.

In leprosy, then, the eye is first attacked on the inside and the disease spreads gradually to the external parts. As I have said, the root of the iris seems to be the usual starting point for the bacilli. Endogenous infection, then, of the eye in leprosy is the rule. Theoretically, of course, it can not be denied that the disease can be communicated to the eye from the outside, for example, from the contact with the eye of a leprous lid. A nodule in this location by rubbing across the conjunctiva can readily cause a defect in the epithelium and in this way a point of entrance is made for the bacilli. There is, however, no anatomical proof of this being the case, for in most cases of leprosy where nodules have been found in the corneal limbus there was nothing to show the impossibility of the infection having traveled from within

outward. When the primary infection occurs in the skin we usually have disturbances in the sensibility of the parts involved, as is shown, for example, by pigment changes, ulcers, etc., but none of the cases seen by Franke and Delbanco exhibited any such signs or symptoms. *A priori* one must conclude that the bacillus is present in the eye a considerable time before giving rise to any clinical manifestation whatever of its presence. I might refer, in conclusion, to the work of L. Borthen, who is of the opinion that infection of the eye in leprosy starts in the uveal tract, to which fact may be chiefly attributed the resulting blindness in this class of cases.

II.

It is rather interesting to note the reaction which has taken place within the past year or two with reference to this question of intraocular disinfection by means of iodoform. We are all familiar with the method and, no doubt, recall the fact that considerable enthusiasm was aroused among our continental confrères by Haab's communication. We will remember, too, that Haab not only ranks the method high as a means of preserving an eyeball which has been the seat of an infection, but he holds out strong hope that in introducing iodoform into an injured eye we are employing a valuable prophylactic measure against sympathetic ophthalmia. A number of cases were reported which might lead one to think that we had come into a goodly heritage, but the reverse side of the picture is now turned to us by Laas, von Gross, Pape, Hartwig and others. Hartwig and Frank report nothing but failures. Frank's observations were made in the Griefswald eye clinic and comprise the histories of seven cases in which the iodoform rods were introduced into the eye. In six cases the rod was introduced into the anterior chamber and once into the vitreous. In only one case was there anything approaching a successful result of this treatment, and in this case the patient was able to see the movements of the hand in 1½ m. In the remaining six cases it was found necessary to enucleate the eyeball, or at least to resort to optic neurectomy. Frank never noticed any difference in the character of the inflammation after the iodoform was introduced. He did notice, though, that in four cases marked infiltration of the cornea followed the introduction of the iodoform. This infiltration took the form of either a spreading ulcer or of a diffuse grayish area which showed marked tendency to spread. It may be said here that Cohn has noticed pretty much the same reaction after employing this method. Frank is of the opinion that this complication is directly due to an injury of

Descemet's endothelium by the ends of the rods. Certainly in cases where the rods were not used this complication was not observed.

The results reported by Kraus of Marburg are equally as discouraging. Eleven cases of infected injuries of the eye were treated after the manner suggested by Haab. Four times it was found necessary to enucleate the eyeball, four times phthisis bulbi was seen, and once total corneal staphyloma resulted. In one case only did success follow. Kraus had one case of sympathetic ophthalmia, and in another of his cases he noted that an ulcer developed in the cornea at the point where the iodoform rod was lying and that this ulcer only disappeared on the removal of the rod. Kraus, indeed, expresses himself with considerable vigor and in no uncertain language against the method and declares that it should be ruled out as injudicious.

Cohn reports four cases of penetrating wounds of the eyeball in which he employed Haab's method of treatment. In all of the cases the eye was enucleated, and in three of them for threatening sympathetic ophthalmia. As a prophylactic against this dread disease iodoform disinfection seems to be a dismal failure. From an analysis of cases on record it looks as though the introduction of the iodoform might possibly put a stop to a violent or fulminating process (which often develops into panophthalmitis in this class of eye injuries), so that we get a sluggish form of inflammation and a shrunken eyeball. I am rather of the opinion, however, that this sort of an eyeball might be more dangerous than one which had passed through an intense panophthalmitis and which had discharged or disgorged its infectious contents.

We all know that iodoform has no rank as a germicide and is valuable simply because it stimulates the cells of the tissues and thus helps them in their struggle with the bacteria. In those cases where iodoform was employed and sympathetic ophthalmia was absent it is certainly to be questioned whether the happy issue was due to the use of iodoform, for in every case there was associated with the iodoform other treatment, as, for instance, diaphoresis, mercurialization, etc. In view, then, of the reports of Cohn and others one can not avoid the conclusion that the introduction of iodoform into a wounded eyeball is a therapeutic measure of exceedingly doubtful value and that as a safeguard against sympathetic ophthalmia it is of distinctly light weight.

III.

We are hearing from time to time of the use of adrenalin in glaucoma and of the special advantages resulting from its employ-

ment in this disease. Not very long ago Grandclément reported three cases of acute glaucoma in which adrenalin was used in combination with eserin. His results are interesting and suggestive, though it must be said that perfect success was seen in only one case. Semm strikes a note of warning in this connection. He reports two cases. The first case was a man of 72 with absolute glaucoma and tension $+2$. The patient declined operation, so eserin was used with advantage for several weeks, after which all treatment was stopped. Not long afterwards he had another attack of glaucoma and this time eserin was used along with adrenalin, 1:1000. In less than an hour he was suffering violent pain and his vision had dropped to the ability to distinguish the movements of the hand. The cornea was steamy and the tension was $+3$. He was given a hot foot bath and a hypodermic injection of morphin and several instillations of eserin. This treatment kept up for several days resulted in relief from his symptoms. The next patient was a woman of 58 who was suffering with hemorrhagic glaucoma. The pupil was widely dilated, the cornea cloudy, and the tension $+1$. Two drops of adrenalin were instilled. Fifteen minutes later the pupil was dilated ad maximum, the eye was of "stony hardness," the tension $+4$, and the patient was suffering intensely. It was found necessary to enucleate the eye.

The author then enters into a discussion of the cause of the outbreak in these two cases after the use of the adrenalin, a discussion based, of course, upon the well-known physiological effects of adrenalin. It is sufficient to say, however, that there are cases of glaucoma in which adrenalin is contraindicated, and it goes without saying that a glance into the eye with the ophthalmoscope and a trial of the tension should be made in persons who are over 50 years old, and in the case of whom we propose to use adrenalin for some purpose or other.

ANOTHER CASE OF AMAUROSIS FROM PARAFFIN INJECTION INTO THE NOSE.

By DR. MINTZ, MOSCOW, RUSSIA.

[Reviewed by Harold Gifford, M.D., Omaha, Neb.]

Mintz, surgeon to the Alt-Katharinen Spital at Moscow, reports¹ the following case: The patient was a man, aged 25, whose syphilitic saddle-nose Mintz had reformed in 1903 by the injection of a gram of paraffin. A year later, as a dent had formed in the old paraffin, the patient returned for further beautification, and on

1. *Centralblatt für Chirurgie*, 2, 1905.

Sept. 2, 1904, Mintz injected $1/3$ gram of paraffin (melting point 43 degrees), one-half of it on each side of the nose ridge about $1\frac{1}{2}$ cm. from the tip. Three minutes later the left eye became painful and the vision of that eye, within a short time thereafter, was entirely gone; vomiting; pulse 48. The ophthalmoscopic examination, made 20 minutes after the accident, showed nothing abnormal in the fundus, but a paresis of the internal and inferior rectus and the inferior oblique was evident. The next day the lids were edematous, there was left exophthalmos, the ball could only be moved slightly up and out, fundus not visible. September 5, eyeball immovable, corneal opacity more marked, skin of the nose-ridge bluish black. September 7, two thrombosed areas on the ridge of the nose, separated by relatively healthy skin. Edema of lids and corneal opacity more marked, eyeball can be slightly moved. September 10, exophthalmos and corneal opacity less marked. September 13, iritis sinistra. September 24, fundus visible; pupil [papilla?] slightly cloudy. October 10, white masses of exudate on the lens capsule; posterior synechiæ; fundus hyperemic. October, vessels can be made out with the ophthalmoscope; decided venous stasis. November 16, atrophy of the optic nerve, V.=O.

Mintz explains the events as follows: Under the influence of the injection there developed, first, a thrombosis of the external nasal veins which spread by continuity to the territory of the inferior ophthalmic vein. As the thrombosis spread toward the optic foramen, thrombosis of the central retinal vein, the main trunk of the ophthalmic and the cavernous plexus occurred.

In the interest of paraffin cosmetics, Mintz regrets that he was guilty of no technical mistake in making the injection. When, therefore, in spite of every precaution, such complications can arise this possibility should be explained to the patient before any paraffin is injected into his nose.

This case has been abstracted at length, partly because it is in a journal somewhat out of the way for the ophthalmologist, partly because of the extremely interesting nature of the eye symptoms. It will be remembered that in the two other similar cases of Hurd and Holden² and of Leiser, the diagnosis of embolism of the central retinal artery was made in the Hurd-Holden case; while Leiser³ refers, in his first article, to the probability of a thrombosis having occurred; but in his latest reference to the case⁴ he

2. *Med. Record*, July 11, 1903.

3. *Deutsch. med. Woch.* 14, 1902. *Vereinsbeilage*.

4. *Deutsch. med. Woch.* 43, 1903.

speaks of the accident as due to an embolism in the region of the left eye. The later symptoms, in the case of Mintz, make it practically certain that the loss of sight was due to a venous thrombosis, developing so rapidly that so far as the immediate subjective eye-symptoms were concerned they might as well have been due to an embolus. With this in view, considering the edema of the lids, and the loss of motility in Leiser's case, it seems quite certain that in his case also thrombosis and not embolism was the cause of the eye-symptoms. In the Hurd-Holden case marked symptoms of thrombosis were wanting, and the ophthalmoscopic picture plainly showed obstruction of the retinal artery, but the improbability of a bit of paraffin finding its way through a persistent foramen ovale (as suggested by the authors) and back again to the eye of the same side as the injection is so extreme that one is tempted to assume that a small artery was punctured, by the needle, into which the paraffin was forced until the ophthalmic branch was reached, when a piece might easily have been broken off and washed into the retinal vessel.

The symptoms of collapse and the vomiting in the cases of Leiser and Mintz are not easy to explain. There is no evident reason why they should occur simply from a plugging of the orbital veins. Must we not believe either that beside this some of the paraffin passed on into the pulmonary artery? Or is it possible that from a sudden thrombosis a transitory glaucoma developed? We think the latter supposition worth considering in spite of Leiser's stating that in his case the tension was subnormal 24 hours after the accident: while Mintz says nothing concerning the tension.

In these cases of blindness after injection into the nose our interest naturally is great, but as oculists it is only secondary, while for the results of injections into the orbital tissues we are directly responsible. So far the writer has heard of no serious results from injecting paraffin into the orbit in man, but it should not be forgotten that Hertel,⁵ while experimenting with such orbital injections, lost two of his dogs from pulmonary embolus and was led to recommend the introduction of solid balls in place of injections.

Considering the wide field for the use of paraffin in orbital cosmetics, it is remarkable that so little has been written on the injection of this substance in old enucleation cases. Certainly if any one has performed any large number of such injections a report of the results, both immediate and permanent, would be of great practical value.

5. Arch. für Ophthal., iv, 2.

Reports of Societies.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting in Denver Jan. 21, 1905.

Dr. Bane, Chairman, presiding.

CENTRAL CORNEAL ULCER.

Dr. Melville Black presented a case and submitted the following report: This man is 24 years old and a brakeman by occupation. He is apparently perfectly healthy. First seen over a month ago with a central corneal ulcer, presumably caused by a cinder. This healed in about a week, leaving a facet that still remains. A few days later a spot, slightly elevated and of grayish appearance, came about 3 mm. to the temporal side of the first ulcer. In 24 hours a depressed ulcer about 1 mm. in diameter formed at this point, which healed, leaving a facet, then broke down again, then healed and broke down again. This sort of thing has been going on for twenty days. Another spot was noticeable yesterday close to and above the two former ulcers. It is evidently going to pursue the same course as the others. There is evidently some systemic cause, and yet none can be found.

Discussion.—Dr. Boyd had good results with Fowler's solution in these cases. Beginning with ten drops, decreasing one drop each dose and then increasing again.

Dr. Patterson advised an examination of the nose and teeth in such cases for necrosis.

Dr. Libby would give iron in these strumous cases. He agreed with Dr. Boyd as to giving arsenic.

Dr. Coover suggested the use of iodid of potassium in such cases.

Dr. Black asked for the opinion of the members in regard to the removal of the eye which had been injured some time ago by pieces of copper. (Case shown to the society two months ago.) In the discussion Dr. Boyd reported a similar case where the eye had been lost. It was the unanimous opinion of the members that the eye should be removed.

DETACHMENT OF RETINA.

Dr. Coover brought before the society a case of detached retina and submitted the following report: Thos. M., aged 35, has been wearing high myopic lenses for years. On Dec. 19, 1904, while riding against a very cold wind for many hours, noticed on his re-

turn home that his left eye was very red, and his vision was somewhat obscured by dark bodies floating in the eye. December 20 noticed that his vision was very much obscured and that objects came from below and from the nasal side. Each day objects became more and more cut off until December 27 he called upon Dr. Coover, who found his vision reduced to light perception except in the extreme upper field where the tips of the fingers could be seen. The ophthalmoscope revealed a detachment of the retina in the upper and temporal part of fundus, extending downward to the disc. Vitreous had many floating opacities.

Treatment consisted of rest in bed, compress bandages, pupil contracted, salicylate of soda twenty grains every four hours. On the fifth day found the retina was reattached and vitreous clearer, and has so remained. Vision much better, field has greatly increased. On examining the eye three days later quite a large detachment in the lower part of the retina was found to be present. Evidently the fluid exudate had gravitated downwards, causing the detachment below.

Discussion.—Dr. Black advised scleral puncture, yet considered the prognosis bad.

Dr. Jackson thought there was shrinking of the vitreous.

Dr. Patterson thought gravity a factor in the detachment as it exists and puncture as plausible.

HEMORRHAGIC RETINITIS.

Dr. Banc presented a case with the following report: Mrs. R. A., aged 52, first seen Dec. 27, 1904. Three years ago the right side of the body became partially paralyzed during an attack of fever, probably typhoid. The paresis cleared up in about a week. About a month ago she first noticed the vision of the right eye failing. She has noticed what she termed flashes of light as from a candle in front of the right eye. Vision with right eye 3/60, left eye 6/6. Pupils are equal and respond to light and accommodation. Fields are normal for white. There are flame hemorrhages in the retina of the right eye, mostly to the temporal side of the disc; also numerous woolly white patches in the same region. The appearance of the fundus is quite typical of albuminuric retinitis. Two examinations of the urine have been made and there is an absence of albumin and casts. Dr. Todd has made a blood examination and reported hemoglobin, 80 per cent.; red corpuscles, 4,910,000, and leucocytes, 5,600. The patient called my attention to an induration about the size of a hazelnut on the outer surface

of the right maxilla, just above the first bicuspid. The induration was apparently excited by the pressure of a poorly fitting plate of artificial teeth. She has been taking iodid of potassium in increasing doses.

Discussion.—Dr Libby remarked that the lungs should be examined in this case.

Dr. Bane showed a case of iritis and keratitis.

CONCERNING THE RELATIONSHIP OF NASAL DISORDERS TO VITREOUS OPACITIES

was the subject of a paper read by Dr. J. A. Patterson (See OPTHALMIC RECORD, March, 1905).

Discussion.—Dr. Melville Black stated that “about eight years ago his attention was rather forcibly called to the relation of nasal and vitreous disease by a patient in his own practice. This man complained of occlusion of his right nasal passage. Examination showed a very large nasal spur, which was removed. He said nothing about his eye having troubled him until several days later. It seems that he had been under the care of an oculist for a year for a disturbance of the vitreous of his right eye. He said he had taken all kinds of medicine, and had finally become disgusted and quit, and that he did not propose to take any more because he believed the eye was incurable. Examination showed a vitreous so clouded that only a dim reflex was obtainable. No treatment was urged and nothing more was said about the eye until later, when he reported that the vision was improving, and in about two months’ time the vision was almost normal, and only a very few shreds of membrane were visible in the anterior portion of the vitreous, with no fundus lesion discernible. Since then Dr. Black has been on the watch for relations between diseases of the eye and the nose and has seen a good many. He believes there are two factors that may work to produce these lesions of the eye from the nose. One is through the venous channels, and the other is through nerve influence.

Dr. Marbourg: Dr. Patterson has opened up a new field for us.

Dr. Bane exhibited a conchotome known as Milbury’s. An excellent instrument for the removal of the turbinals.

Dr. Neeper presented a patient, a man about 30 years of age, with an affection of the conjunctiva of the right eye. It consisted of a dry patch of thickened conjunctiva 5x6 mm. in diameter, located near the outer margin of the right cornea. The diagnosis was xerosis.

WM. C. BANE, Secretary.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED
KINGDOM.

Meeting held Thursday, Feb. 9, 1905.

John Tweedy, P.R.C.S., President, in the Chair.

EXOSTOSIS OF THE ORBIT.

Mr. Edgar Stevenson read a paper on a case of orbital exostosis. The patient, a girl aged 22, was seen on November 20 last with proptosis, well marked downwards and outwards, in the left eye. It had been first noticed six months previously, and its increase had been rather rapid. She had no pain except an occasional neuralgic twinge, the eye movements were unimpaired, the vision was normal and there was no diplopia. Under chloroform a small hard mass was felt lying under the outer and upper margin of the orbit. Upon operation it was found to be much larger than was expected; attached to the inner angle of the orbit, with its base in the frontal sinus, it extended right across the roof of the orbit. It was of cancellous tissue with a shell so hard that two drills were broken in an attempt to get into it; however, a small piece was removed with a chisel and showed its structure. The attached base was not very broad and the growth was wrenched away without difficulty. It was of an irregular pear-shape, weighing 351 gr., and measuring $1\frac{1}{2}$ in. in its largest diameter. The patient made an excellent recovery; no eye affection remaining.

EXOSTOSIS OF THE ORBIT.

Mr. A. Ogilvy related notes of a case of large exostosis of the orbit. The patient, a healthy man, aged 24, had no history of any ailment, and a good family history. When first seen, in November, he complained of epiphora, but on examination a large hard mass was felt in the right orbit, evidently attached to the nasal side. The tumor was causing myopia and some choroidal changes. It had two pedicles, and its removal by operation proved difficult. The patient made an interrupted recovery, but diplopia was present; this, however, passed off in two weeks. The questions which the case raised were these: (1) What was to be done with his disorganized lacrimal apparatus? (2) Did the tumor cause the myopia which had now disappeared? (3) Were these due to hereditary syphilis, as stated by Charles Stedman Bull? It was curious that so large a tumor could exist in such a small space as the orbit without causing more damage and discomfort than it did.

THE TREATMENT OF TOBACCO AMBLYOPIA.

Mr. Wray read a paper on the treatment of tobacco amblyopia. He divided the cases into three groups: (1) Those with amblyopia only; (2) those with amblyopia and tachycardia; and (3) those with tachycardia only. He urged that in view of the tendency to cardiac failure the pulse should always be examined. He had recently seen cases where the pulse ranged from 96 to 135, and patients suffering from tobacco poisoning should be warned that tachycardia might develop. The amblyopia usually disappeared if taken early, but by all the recognized treatments recovery was a slow process. As regards the tachycardia, he had seen several cases where it had persisted even after tobacco had been given up for years. He alluded to the toxic breath which was always present with amblyopia, but never when tachycardia was the sole symptom. He ascribed the amblyopia as probably due to saturation of the blood with tobacco alkaloids, and the tachycardia as due to injury or destruction of the cardio-inhibitory neurons of the trachea and bronchi, while bad teeth and a catarrhal condition of the alimentary and respiratory tracts aided the absorption of the poisons. Being much dissatisfied with the orthodox treatment with pot. iod. and strychnine, and considering that nicotine was freely soluble in water, he had suggested the following treatment. The patients were directed to dress warmly and drink a pint of water at 7 a. m., and walk briskly for thirty minutes in the open air. Then to drink a second pint and go for a similar walk. Then rest for a few minutes and take breakfast. A third pint was to be taken in the middle of the morning, and a fourth in the middle of the afternoon. Some had even continued to smoke as much as $\frac{1}{4}$ oz. a day, and in three cases practically normal vision was restored in fourteen days. As regards the effect of the water treatment on the heart the author had not had the opportunity of trying it on the new cases he had lately seen for this had not been a marked symptom in them, but unquestionably the accelerated beat he had noticed had not disappeared in the same way as the amblyopia. There was a considerable doubt as to the method in which nicotine was eliminated, but he thought that it was mostly by the kidneys, though the lungs and skin probably bore a share. The water treatment had the advantage of utilizing all three ways.

NEURO-FIBROMA OF THE EYEBALL AND ITS APPENDAGES.

Messrs. E. Treacher Collins and Rayner D. Batten read a paper on Neuro-fibroma of the Eyeball and its Appendages. The case

which formed the basis of this paper was a girl aged 14, who had been under Mr. Batten's observation for three years. The right eye was buphthalmic with vision of 1/60. There was also much hypertrophy of the upper lid. There was a doughy swelling over the right temporal fossa. The condition dated from birth. This unsightly eye was excised together with a wedge-shaped piece of the upper lid. The microscopical condition of the lid showed it to be a case of congenital elephantiasis associated with plexiform neuroma. The chief interest centered in the eye, for it was the fourth case recorded in which neuro-fibroma of the eyelid had been associated with a buphthalmic eyeball. This condition, however, did not seem to be due to fibromatosis of the ciliary nerves, but to increase of tension due, as in another case recorded by Mr. Collins, to congenital adhesion of the root of the iris to the back of the cornea. The terminal nerves in the cornea were, however, thickened. The condition seen in the choroid had not before been noted. Throughout its structure was denser than normal, and in parts it was considerably thickened. It was chiefly composed of fibrous tissue, highly nucleated, with pigment cells present, and very few blood vessels. Numerous small oval bodies presented the appearance of enlarged nerve ends. By comparison with the other cases recorded it was shown that all portions of the ciliary nerves supplying the eye may be affected with congenital fibromatosis, and that the uveal tract, like the skin, might be affected with a general hyperplasia of its fibrous tissue, though the extent of the affection varied. In some only the terminal filaments and end organs were involved, and in others the larger trunks were also affected.

Meeting held Thursday, March 9, 1905.

John Tweedy, P.R.S.C., President, in the Chair.

CLINICAL EVENING.

Mr. Edgar Chatterton showed a woman, aged 38, who had the inner canthi, caruncles and innermost extremity of the lower palpebral conjunctivæ discolored and of a dark gray appearance. As far as she knew this appearance had always been present. She had never had her lids treated with anything, neither had she any sign of old disease. Her occupation consisted of filling toy crackers with fulminate of silver, and she had done this work for years. Mr. Chatterton suggested that the silver salt had got into the eye and had caused the discoloration shown.

Mr. Charles Blair showed a case of retinitis proliferans in a

woman, age 59. The vision of the left eye was suddenly lost six months ago. The right fundus showed changes suggestive of albuminuria with numerous retinal hemorrhages. The urine was, however, free from both albumin and sugar.

Mr. A. Ogilvy exhibited a most interesting case of pemphigus of the conjunctiva occurring in a farm laborer, who, for failing health, went to Canada. Shortly after getting there he suffered from pemphigus, the attack lasting for six weeks. He remained well for six weeks and then returned to England, at which time he could see to read with ease. On the passage home he had another attack which was very severe. The eyes got rapidly worse and now the corneæ were seen to be opaque and the conjunctiva was so shrunken that but little sac remained and the entropion was most troublesome. Lanolin applied to the eyes gave great relief.

Messrs. Lawson and Parsons showed a drawing of a case of sarcoma of the choroid which occurred in a man, age 34. He had had a squint for two years and the sight of the right eye had been failing for a year, and when first seen it was almost blind. For 3 months a black swelling has been present on the sclerotic and this was increasing rapidly in size, and had much the appearance of a staphyloma. The eye was blind and the lens was opaque. The eye was removed, and on section a large sarcoma was found which was thin and flat and not at all like the choroidal sarcoma that is commonly seen.

Mr. Parsons gave a lantern demonstration of some cases in which peculiar folds in the retina were found in certain eyes that had been examined pathologically.

Mr. Halliburton McMullen showed a child, age 9 months, who was brought on account of an occasional upward deviation of the eye which had been noticed directly after birth. On examination it was found that there was complete absence of downward rotation of the right eye, the movements in other directions were normal. On looking downwards the left eye fixed, while the right eye was rotated upwards and outwards and was slightly retracted, the eyelid at the same time became elevated and retracted. The inferior rectus and possibly also the superior oblique was defective.

Mr. R. E. Bickerton showed a case of peculiar changes in the optic disc, retina and choroid occurring in a patient, age 15. When first seen in July last he had well-marked neuritis in the right eye with surrounding retinitis. The disc was now raised, it was of a bluish-white color and had a wool-like margin. There were

also numerous fundus changes which were beautifully illustrated by ophthalmoscopic drawings.

Mr. Charles Wray showed a man who had improved considerably while under his treatment for tobacco amblyopia. This treatment he fully described at the last meeting of the society. It consisted briefly of making such patients take brisk walks and drink large quantities of water.

Messrs. Ormond and McCash showed a man who had a piece of metal embedded in the retina.

Mr. R. R. Cruise showed a patient from whose eye he had extracted a piece of metal with Haab's magnet, and in which some interesting fundus changes were present.

C. DEVEREUX MARSHALL.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting Feb. 21, 1905.

Dr. Geo. E. de Schweinitz, Chairman, presiding.

THE TREATMENT OF INTERNAL OCULAR INFLAMMATION BY DIAPHORESIS.

Dr. H. F. Hansell read a paper describing two cases of acute choroiditis and one of chronic uveitis in which the remedial effect of sweats was marked. The first was that of a man weighing 234 pounds who had lost the vision in the left eye until only L. P. remained. In the choroid just above the foveal region was a dense mass of pigmented exudate and the vitreous was filled with fine opacities. The patient's weight was reduced 29 pounds after twelve successive hot baths and profuse sweating, and the vision was restored to the full acuity in twenty-one days. The second case closely resembled the first in the nature of the affection and in the prompt and complete recovery. The third was less tractable, the man having suffered with a low-grade uveitis for eighteen months. The final result, however, was equally satisfactory. The writer relies mainly upon the hot bath, hot-water bottles, and blankets for the induction of the sweat and reserves pilocarpin for patients who do not readily respond to the simpler treatment. In conjunction with the sweats he recommends the use of mercurial inunctions and, after the patient has regained his liberty, the administration of potassium iodid.

Discussion.—Dr. Pyle referred to a case resulting in death from the employment of pilocarpin in the production of diaphore-

sis and commented favorably upon the omission of this drug in the method advocated by Dr. Hansell.

ASTIGMATISM.

Dr. C. F. Clark, Columbus, Ohio (by invitation) presented a paper on astigmatism after simple extraction, as modified by the conjunctival flap, which was a supplement to a paper published by him in 1899. He stated that, while in moderate degree post-operative astigmatism is of common occurrence, it must be looked upon as an evidence of some defect in the operation, or the healing process. As it may be accurately measured, it serves as a gauge of the accuracy with which the edges of the wound have remained in coaptation. Having in his former paper made a comparison of the average degree of astigmatism in a series of 30 cases of simple extraction, taken from his own practice, with the same number of cases of extraction after preliminary iridectomy taken from the practice of Dr. J. A. Lippincott, the writer in his present series, attempts to show the effect upon the degree of post-operative astigmatism produced by a modification of the incision, and a change in the after-dressing. His former incision was in the line of separation between the clear cornea and the limbus, with sometimes a slight turning forward of the knife in completing the section, while in the latter series the section was all in a plane parallel with the iris, but far enough back to form a good conjunctival flap. In spite of its manifest disadvantages in other respects, owing to its safety in so far as prolapse is concerned, and the desire to make a fair comparison, the writer adhered quite consistently to this procedure.

From a consecutive series of some 30 cases were excluded: first, all cases of complicated cataract; second, all in which an iridectomy was performed; third, all cases of simple extraction in which, owing to the presence of an undivided secondary membrane, or from any other cause, vision equal to 20/40 had not, as yet, been obtained; and fourth, those cases which failed to report for further study. The average primary astigmatism in 6 cases, nine days to six months after operation, was 2.82 D. The average for nine cases, nine days to six months after operation, was 2.66 D. The maximum primary astigmatism was 4 D.; the minimum ? D. Average vision was $20/27.77+ = (5/7+)$. The amount of astigmatism was below that given as the usual average and a distinct gain over the former series without the conjunctival flap in which the average was 3.95 D.; but the results obtained by this method so far as astigmatism is concerned were still unequal to

those secured by Lippincott, who employed the preliminary iridectomy, his average being only 1.5 D., though, owing to the iridectomy downward, or some other cause, his visual results were not so good.

Discussion.—Dr. Harlan stated that it was his custom formerly to make his section in the cornea, but he now preferred to make it in the limbus with a small conjunctival flap, and always performed extraction without iridectomy in uncomplicated cases. He had made no comparative studies of the amount of astigmatism produced by the different methods.

Dr. Ziegler believed that the proper corneal curvature is best maintained by keeping the knife continuously in the same plane in making the section. Prolapse of the iris, in his opinion, is largely due to neglect of this procedure, it making no material difference whether the section is placed in the cornea or conjunctiva.

Dr. Hansell stated that he preferred preliminary iridectomy, if possible, and had recently avoided the employment of fixation forceps in performing the operation. He was inclined also to avoid the making of the section back of the limbus.

Dr. Clark, in closing the discussion, thought it probable that the downward section employed by Dr. Lippincott might account for the lower average of astigmatism in the published statistics of the latter.

PARALYSIS OF THE UPWARD MOVEMENTS OF BOTH EYES.

Dr. W. Zentmayer reported this case in a strong, well-nourished man, aged 57 years, who drank and smoked to excess. An attack of dizziness on the night preceding the onset of the muscle trouble was followed in the morning by diplopia and foggy vision when attempting to read. Upward movement of each eye was entirely abolished either separately or conjugately. Convergence was weak and unsteady and accompanied by tremor of the inferior fibers of the orbicularis. Lateral conjugate movements were full but nystagmic. Diplopia could not be elicited. The iris of the right eye was prompt to light and somewhat more active than that of the left. Vision of O. D. = 6/9; O. S. = 6/12. The fields were greatly contracted both for form and color and there was a low-grade neuro-retinitis with slight contraction of the arteries and distention of the veins. Two weeks after the onset vertical diplopia was first complained of and was found to be due to greater weakness of the left superior rectus than of the other muscles. Three weeks later objectively the movements were full, but a slight paresis of the left superior rectus could still be demonstrated.

An examination by Dr. W. G. Spiller showed no signs of disease of the nervous system other than those found in the eyes. His opinion was that there was a vascular lesion near the aqueduct of Sylvius involving the nuclei of the third nerve, probably due to alcohol.

TRAUMATIC ANIRIDIA.

Dr. de Schweinitz described this case, with the following history: Twenty-four hours prior to his examination, a man, aged 36 years, his eye previously having been entirely healthy and normal in all respects, struck it against a sharp, projecting iron post. He was wearing spectacles at the time and these were shattered by the blow. When examined, the following conditions were present: Vision equaled light perception; there was a red reflex from the fundus, but the details could not be seen on account of the blood-stained vitreous. There was complete aniridia and equally complete aphakia. A cut 1 cm. in length extended along the lower corneo-scleral border, incising this tissue as cleanly as if the cut had been made with a knife. From this incision some vitreous protruded.

The treatment consisted of iced compresses for two days, calomel, followed by large doses of salicylate of sodium. At first there was little pain, but after a week there occurred, almost at regular intervals of two and one-half hours, sharp attacks of ciliary neuralgia, followed in a few seconds by profuse lacrimation. Gradually these phenomena disappeared, and at the end of a month the eye was practically free from irritation, and with a suitable correction, namely, + S. 9. D. \bigcirc + C. 75 D., axis 150° , vision was 5/5. The eyeground was normal, and the media, with the exception of some stringy opacities in the vitreous and a grayish veil in its lower portion, entirely clear. Previous to the accident the eye had been myopic 3 D. It is probable that the lens carried the iris with it when it was dislocated through the opening, although it is possible that the grayish veil in the vitreous may have represented the remnants of the iris.

The points of interest evidently were the perfect healing after so serious a wound with normal vision, the periodic attacks of pain lasting for nearly three weeks, and the control of the whole process by massive doses of salicylate of sodium.

THREE CASES OF SARCOMA OF THE CHOROID AND ONE OF GLIOMA OF THE RETINA.

Dr. G. E. de Schweinitz and Dr. B. F. Baer, Jr. (by invitation) exhibited the macroscopic and microscopic specimens from the following:

Case 1.—A woman, aged 36 years, whose eye was enucleated in the stage of absolute glaucoma. It was found to contain a large pigmented sarcoma of the small polymorphous-celled type, containing huge areas of necrotic material and extensive hemorrhages, which probably caused the violent glaucomatous symptoms which she had at the time of enucleation. The probable period between the first appearance of the sarcoma and the time of absolute glaucoma was in the neighborhood of six years. At the present time, sixteen months after enucleation, there is no sign of recurrence.

Case 2.—A woman, aged 54 years, with the right eye in the stage of fungous hematodes. Only the posterior half of the eyeball existed, and from it protruded a fungous mass, which measured 4 cm. in length and $2\frac{1}{2}$ cm. in width, and which protruded between the fissure of the lids. The tumor was made up of round and oval cells of the sarcoma type, with very large nuclei and a minor amount of protoplasm. The growth was exceedingly vascular, the vessels being of the embryonic type. Around its borders there was considerable pigmentation. In addition to the fungous mass protruding anteriorly, there were large posterior extrascleral nodules. There has been no sign of recurrence since the operation, four months ago.

Case 3.—A man, aged 48 years, had been blind in his left eye for eight months, and four months prior to his visit had been told that he had detachment of the retina. For three days he had suffered intense pain, and when he was examined there was extensive chemosis of the lids, enormous chemosis of the bulbar conjunctiva, the eyeball being practically fixed in its movements, with excruciating pain which radiated above and below the orbit. The tension was +3 and there was a special area of induration in the lower half of the eyeball. On enucleation of the eye, the orbit was found free, but a small flat sarcoma was seen within the globe to one side of the optic nerve entrance. Examination proved the growth to be a moderately pigmented, spindle-celled sarcoma.

The case was interesting on account of the intense severity of the glaucomatous symptoms, simulating, as they did, orbital cellulitis. There was complete occlusion of the angle of the anterior chamber by adhesive inflammation between the root of the iris and the posterior surface of the cornea.

Case 4.—A girl, aged 4 years, when examined, was found to have a normal right eye, but in her left eye were the typical signs of glioma. Not only could the gliomatous growth be seen through the pupil space, but a number of small, yellowish nodules were scattered over the iris. The eyeball was enucleated and found to

be entirely filled with the gliomatous tumor, which contained the usual so-called glioma cells in the form of mantles around vascular channels, interspersed with areas of necrosis. Rosette formation was not found. The optic nerve was well infiltrated with glioma cells, and the nodules in the iris had a similar structure. The patient had not been seen since the date of the operation, six months ago, nor could her subsequent career be ascertained.

Discussion.—Dr. Hansell inquired whether the *x*-ray examination would not reveal the presence of a particle of glass within the eye, stating that he had seen a case in which a distinct shadow was observed in the skiagraph.

Dr. Sweet believed that it should be possible to secure a shadow of glass in the eye with an *x*-ray tube of medium penetration and short exposures. He called attention to the case reported by him before the section several years ago of an engineer injured by the explosion of a locomotive glass gauge. A piece of glass was located by the *x*-rays close to the ciliary body, and was removed by forceps with preservation of the eyeball. In an injury from the explosion of a glass laboratory flash. Davidson located a piece of the glass in the eyeball by means of the shadow on the radiographs, subsequent enucleation verifying the *x*-ray findings.

Dr. Clark had observed two cases of suspected glass within the eye in which *x*-ray examination gave no assistance in the diagnosis. Although his experiments with lead-glass produced shadows, while other varieties of glass gave negative results, he was inclined to believe that the thickness of the particle of glass had much to do with the result obtained.

Dr. Harlan related the history of a boy, aged 16 years, who had been struck on the eye by a tin horn thrown by another boy on the opposite side of the street. No iris or lens was found at the examination, but upon later inspection scars were discovered upon the lower lid and in the upper ciliary region, showing the eyeball had been ruptured *contra-coup*. Vision ultimately equaled 20/30 with spherical correction.

Dr. Pyle emphasized the point that it was somewhat difficult to ascertain whether aniridia was present or not in old cases and inquired whether transillumination had been employed in the cases reported, or in any of the cases of intraocular tumors, to assist in the diagnosis.

Dr. de Schweinitz stated that, although the *x*-ray examination had been repeatedly made in the case of traumatic aniridia, the results had been negative, and, indeed, they might have been expected to be so, as he understood that glass, except lead glass, did

not show in an *x*-ray plate, at least, so he was informed by the expert who made the skiagrams. He was aware that glass had been shown on *x*-ray plates, but supposed that it was not such glass as that of which spectacles were manufactured.

He stated, also, that he had made some experiments in a rather crude manner to endeavor to demonstrate the value of transillumination, but had not employed the apparatus which Dr. Pyle had described, the one which he had used being somewhat on the principle of the small electric bulbs used by the laryngologists. He had not, however, made any examinations of eyes which contained morbid growths, and could not from his own experience state the value of this method as a diagnostic procedure.

Dr. Edward A. Shumway exhibited a new ophthalmic outfit for bedside examination, which was designed for use in general hospital wards or for private work. It consisted of a hand perimeter case into which were fitted spaces for an ophthalmoscope, lens for oblique illumination, trial frames (with a few spherical lenses, red glass, stenopeic slit, prism, etc.), distance and reading cards, with which the ordinary functional tests could be made.

C. E. VEASEY, Clerk of Section.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

The regular monthly meeting was held on Feb. 14, 1905, at 8 p. m., in the Northwestern University Building.

In the absence of the president, Dr. H. B. Young presided.

Dr. Joseph Beck's case of

PHLYCTENULE-LIKE CONJUNCTIVITIS ASSOCIATED WITH FOLLICLES OF THE SKIN

was presented by Dr. H. G. Anthony. He divides tuberculosis of the skin into four varieties: Epidermal, dermal, subdermal and tuberculides. Epidermal tuberculosis is produced by direct infection with the tubercle bacillus into the skin, and in the majority of cases the patient has tuberculosis of the lungs. After expectoration, he wipes his mouth with his hand and infects himself through a skin abrasion; or the physician or nurse or other attendant, by contact, is infected through something used by the patient. No matter how the inoculation occurs, it produces a wart, and this form is called tuberculosis verrucosa cutis.

Dermal tuberculosis, or lupus vulgaris, as a primary disease, is extremely rare. The disease usually originates in some other or-

gan, as in bone, affecting the skin secondarily. The original focus heals, leaving the skin tubercles, which impress one as being primary. In many cases the affection is the result of an embolic process.

Subdermal tuberculosis, or *scrofuloderma*, presents itself in many varieties, sometimes difficult to diagnose. A most important point brought out recently in connection with that form is that in scar tissue there is a variety of atrophy of fat tissue which presents almost the exact structure of tubercle, which has been diagnosed as tubercle.

Tuberculides are any eruption of the skin which does not show the typical structure of the tubercle, does not contain the bacillus of tuberculosis, and will not produce tuberculosis when inoculated into lower animals, does not respond to Koch's lymph, but is inevitably associated with tuberculosis. The exact relationship between these conditions is in doubt. It is claimed that tuberculides are due to emboli of living or dead bacilli coming from distant foci of tuberculosis, or to their toxins. The eruptions that are classed under this head are quite numerous, but it is impossible at present to recognize a characteristic classification.

One of these eruptions is follicles. Anthony briefly reviewed the clinical history of this condition since it was first recognized by Heber. Turick pronounced the eruption a dermatosis occurring in the form of nodes and showing a central necrosis; therefore, he called it *dermatosis nodularis necrotica*, a term that is now generally accepted.

The patient first complains of alopecia areata: he is weak; his pulse is rapid, and there is a little temperature. Then appears an eruption like lupus erythematosus. That means a tuberculide in association, inevitably, with tuberculosis of the lung. The case of Dr. Beck was one of these varieties of tuberculide, associated not with tuberculosis of the lung, but with surgical tuberculosis.

Microscopic examination of the lesion shows a phlebitis, a condition present in many skin lesions; and there is a perivascular leucocytosis and proliferation of the connective tissue of the part, and following that a central necrosis.

The eruption comes out in showers, occurring usually in the spring or fall, but, as in the case presented, they may be more numerous in the summer. It is always symmetrical, showing a tendency to attack certain parts—the ears, backs of the hands and the extensor surfaces of the elbow. Rarely does it attack the face. There is usually a patch over the gluteal regions: one or two seat-

tered lesions over the shin, and a few on the inner surface of the thigh.

The lesion is a decided node set deep in the skin and detected better by the patient than by the physician. In twenty-four hours a pointed and considerably elevated papule appears, and shortly afterward the skin becomes red and then blue, followed by a pustule and a central necrosis. On disappearing it leaves a scar like that of chickenpox. All these symptoms were present in this case.

In a typical case there is no differential diagnosis, although various diagnoses were made, such as (1) lupus erythematosus disseminata of Kaposi (2) hydro-estevale vacciniforme, in which blisters may form on the conjunctiva. The condition may continue throughout life, or it may disappear gradually; (3) Raynaud's disease, but the only resemblance to that condition is in the peripheral vascular disturbance present. This is a cyanotic erythema limited to the backs of the ears and fingers; that is not a picture of Raynaud's disease, but is part of the clinical picture of follicles.

As for the eye lesion present, when Dr. Beck first saw the case, he thought it the same as the skin lesion, although there is no case of follicles on record in which there is an eye eruption.

Discussion.—Dr. Wm. H. Wilder said that while some observers believe that certain affections of the eye and ciliary body are tuberculous, basing that opinion on the histologic findings and not on the demonstration of the presence of the tubercle bacillus, it is by no means positive that a case is one of tuberculosis when the microscope reveals the characteristic histologic findings. But if the statement made by Anthony is correct, that these lesions may be caused by the toxins of the bacillus of tuberculosis, it will be an aid to the understanding of some of these cases of so-called tuberculosis seen in the eye. It will also explain why some observers find so many cases of tuberculosis of the iris, while others do not. Graefe, of Berlin, finds many more cases than do observers in this country.

The lesion presented by Dr. Beck's case has very little in common with ordinary phlyctenular conjunctivitis, although it may have resembled it more in its early stages than it does now. He thought that it was more of an episcleritis than a conjunctivitis. Besides, the patient is almost too old to have a phlyctenular conjunctivitis.

Dr. Henry Gradle stated that this patient's condition could not be called strictly phlyctenulosis, although it bore some resemblance to it. However, if we study phlyctenulosis clinically, we

are very apt to come to the conclusion that it is the analogue of tuberculide of the skin, associated with tuberculosis elsewhere. In the first stage the phlyctenule is a harmless affair disappearing in a week; but later metamorphoses occur which last some time. Sometimes it is an episcleritis or bullæ of the corneo-scleral junction. He is convinced that this condition is always associated with tuberculosis somewhere in the body. Many of the children are scrofulous. Bacteriologic observations have been negative. Many germs have been found, principally staphylococci, but only in the older lesions. In fresh phlyctenules nothing characteristic has been found. At the meeting of the German Ophthalmological Society in 1897, Leber said that tuberculosis is in some way responsible for phlyctenules in children. Gräfe made a few tuberculin injections at the time, enough to strongly suggest that even in cases where tuberculosis is not demonstrable children with phlyctenules are tuberculous. Bruns, he said, found the surest way of producing anything like phlyctenules in rabbits is to inject dead tubercle bacilli; the toxins of the living bacilli did not produce them.

Dr. W. A. Mann cited a case of typical phlyctenule that became chronic and was associated with a tuberculous spine. He treated the case ordinarily for a time, then curetted and cauterized with strong nitrate of silver, and it healed. A second attack ran the same course.

Dr. Wilder asked whether we are justified in assuming tuberculosis in the majority of children who have phlyctenular disease and where there is no proof of the existence of tuberculosis.

Dr. Anthony said that he divides scrofula into three forms: (1) Status lymphaticus of Kunderath; (2) syphilis—that is rare, but will occur, and (3) tubercles engrafted on the status lymphaticus. In regard to dead tubercle bacilli, Odré has done some work in that line, and succeeded in producing follicles by the injection of dead bacilli. Dr. Beck's case is important because it is the first in which the lesion, which is probably a tuberculide, occurred on a part of the body where there are no glandular structures, and that has confused the case.

Dr. W. A. Mann presented a case of

CONGENITAL DISLOCATION OF THE LACHRYMAL GLAND.

Dr. Wm. A. Fisher said he had had a case of this kind which was treated medicinally, the patient refusing operation, and the condition disappeared in about six months under anti-syphilitic treatment.

Dr. W. F. Coleman cited three cases of enlargement of the ocular lobe of the gland, one in a man, aged 28, which had existed six months and disappeared with three applications of the electric needle.

Dr. Norval H. Pierce read a paper on "Present Status of the Question of Spongification of the Labyrinthian Capsule."

Dr. John R. Hoffman presented a case of foreign bodies in the transparent lens.

Dr. Wilder presented a new chalazion forceps. It is universal and consists of two blades with the ends made like the small end of an egg. The forceps are out of the way while operating and can be used no matter what operation is done. It is also instrumental in lessening the strength of the cocain solution necessary to produce anesthesia, thus preventing the possibility of cocain poisoning. The forceps are applied and the whole edge of the lid is exposed, and with a fine needle a weak cocain solution, not more than one-half per cent., can be injected.

ASSOCIATION OF CLINICAL ASSISTANTS OF WILLS' HOSPITAL.

The second regular meeting of the Association was held at the hospital on the 1st of February, 1905, Dr. George Robinson in the Chair.

Dr. Helen C. Upham read a paper calling attention to the absence of examinations for color-blindness in the motormen and conductors on suburban trolley lines. It was pointed out that many of the accidents occurring could be prevented by proper color signals recognized by the motormen. The colors, red and green especially, she said, should be recognized by them. The tests should not be made with wools or colored miniature lights, but, as has been pointed out by Dr. Charles A. Oliver, they should be made under the actual conditions on the road and under atmospheric conditions. On many of the suburban lines a speed equaling that of the steam cars is attained. The cars rush through thickly populated neighborhoods with their human freight at the mercy of those who may or may not know the danger signals, no tests having been previously made. She believed that these men should be subjected to the same examination for acuity of vision and colors as is required of steam railways, ships, etc.

In the discussion, Dr. J. Hiland Dewey reminded the members that many of the accidents on a road occurred not as a result of color-blindness, but by an ignoring of the danger signals through

carelessness of those who are responsible. Dr. John T. Krall thought that, no matter if some employes were careless and caused loss of life, care should be taken in selecting only those who had full acuity of vision in each eye and normal color perception in both eyes. The examination should be made only by those who are known to have normal color perception. He believed that the whole subject of examination of trolley car employes was a very important one.

Dr. James A. Kearney presented a case of so-called traumatic conjunctivitis; also a case of ulcer of the cornea in which dilation of the pupil had not been obtained until eserine had been used for a week, followed by atropin.

Dr. Dewey exhibited five pieces of wood which he had removed from the orbit of a child. Each piece measured about a centimeter long and ranged from one to three millimeters in diameter. The only history obtainable was that the child had run a stick against the eye while playing. The pieces were found situated between the eyeball and the outer wall of the orbit. They were deeply imbedded in the orbital tissues. At the time of presenting the paper the eye was in a healthy condition and the orbital wound had healed nicely. In the discussion, Dr. Robinson commented on the similarity in length of the various pieces, and the remarkable amount of wood which had been stored in the orbit of such a young subject. Dr. Dewey promised a full report of the case at a later date.

Notes and News.

THE office of the OPHTHALMIC RECORD has been removed to 72 Madison street, Chicago.

DR. GEO. F. KRIEGER, of Lafayette, Indiana, has been re-elected trustee of DePauw University, Greencastle, Indiana.

DR. G. ORAM RING has been elected consulting ophthalmic surgeon to the American Oncologic Hospital of Philadelphia.

MASSACHUSETTS BEQUESTS.—Mrs. Andrew G. Weeks, Boston, has given \$5,000 to the Nursery for Blind Babies.—*Jour. A. M. A.*

THE examination for internes for the Illinois Charitable Eye and Ear Infirmary will be held in Chicago May 8th and 9th at 2 p. m. sharp.

DR. CASEY WOOD of Chicago read a paper on "Wood Alcohol Poisoning; Its Symptoms, Diagnosis and Treatment" before the Ann Arbor Medical Club April 13.

LEGISLATIVE PROGRESS.—The bill to regulate the practice of "Optometry," facetiously referred to by the legislators as the "window-glass bill," seems to be defunct.—*Jour. A. M. A.*

JOHN OSCROFT FANSLEY, M.D., College of Physicians and Surgeons in the City of New York, 1877, a fellow of the New York Academy of Medicine, died at his home in New York City, March 25, aged 60.

DRS. CASEY A. WOOD, FRANK ALLFORT, T. A. WOODRUFF, PAUL GUILFORD and FRANK BRAWLEY have moved their offices to the Chicago Savings Bank Building, 72 Madison street, Chicago, where they will be associated in the treatment of diseases of eye, ear, nose and throat.

DR. HORACE M. STARKEY, owing to ill health, will retire from practice in Chicago June 1, 1905, and will resume his work Oct. 1, at Rockford, Illinois. Dr. Wm. A. Mann, who has been associated with Dr. Starkey for fifteen years past, will continue practice as heretofore, and will have histories and records of all of Dr. Starkey's patients.

THE meeting of the Ophthalmologische Gesellschaft is to be held in Heidelberg on the 3d, 4th and 5th of August, 1905. Titles of papers and demonstrations are to be in the hands of the secretary before June 30. The authors of papers are requested to turn their papers over to the secretary ready for printing before the close of the meeting.

EYE AND EAR SOCIETY.—At a meeting held in Danville, March 7, the Eastern Illinois Ophthalmological and Otological Society was organized with the following officers: President, Dr. Cassius M. Craig, Champaign; secretary, Dr. Charles P. Hoffman, Danville, and committee on fee-bills, Drs. Irvin E. Huston and Elbert E. Clark, Danville.—*Jour. A. M. A.*

THE summer course on the eye, ear, nose and throat, to be given at the University of Chicago, will commence the first week in July and cover a period of six weeks. Dr. Brown Pusey will give the course on the anatomy and pathology of the eye, and Dr. George Shambagh will give that of the anatomy of the ear, nose and throat. For particulars apply to the Dean of Medical Students, University of Chicago.

GROUND BROKEN FOR NEW HOSPITAL.—Ground has been broken for the new Manhattan Eye, Ear and Throat Hospital in 64th street. According to the amended plans the hospital will cost between \$450,000 and \$500,000, including the equipment. An unusual feature will be the sun galleries. This is believed to be a great step in advance in hospital construction. The building itself will be six stories high, and in order to obtain space for the hospital equipment the architects have planned a basement of five different levels below the first floor.—*Jour. A. M. A.*

THE DONOR KNOWN.—The director of the Manhattan Eye, Ear and Throat Hospital, New York City, who it was announced last week has given \$25,000 toward the building fund, was Mr. Frank Tilford. His donation was for the construction of a building for an otologic clinic.—*Jour. A. M. A.*

THE meetings of the Hungarian Ophthalmic Society will take place the 11th and 12th of June. The committee has fixed for the principal subject on the first day "The Pathology and Therapy of Trachoma"; for the second day, "The Operation for Cataract." Besides that, some demonstrative lectures will be held. Meetings will take place in the Royal Hungarian Ophthalmic Hospital of the University in Budapest.

At a recent session of the Council of the Academy held in Chicago it was deemed advisable to change the date of the meeting of the American Academy of Ophthalmology and Oto-Laryngology. The Buffalo meeting *will now be held* on the following days:

SEPTEMBER 14, 15 AND 16. INCLUSIVE.

Every member ought to so arrange his time and engagements as to be able to attend the meeting. Dr. H. W. Loeb, St. Louis, President; Dr. Geo. F. Suker, Akron, Ohio, Secretary.

At this year's meeting of the Ophthalmologische Gesellschaft at Heidelberg the winner of the Graefe medal is to be chosen. This medal is awarded every tenth year to that person of whatever nationality who has done most to advance ophthalmology. The medal can not be awarded twice to the same person. The choice is made by a direct vote of the members of the society. Each member is required to send in the name of his candidate to the secretary of the society at least eight days before the meeting. The name of the candidate is to be inclosed in a sealed envelope, which, in turn, is inclosed in a letter signed by the member. The medal has been twice awarded in previous year, first to H. von Helmholtz and the second time to Th. Leber. Prof. A. Wagenmann of Jena is secretary.

RUSSELL MURDOCH, M.D., University of Virginia Medical Department, Charlottesville, 1861, of Baltimore, surgeon in the Confederate service during the Civil War, one of the founders of the Baltimore Eye, Ear and Throat Hospital; formerly lecturer on diseases of the eye and ear in the University of Maryland, and professor of diseases of the eye, ear and throat in the Woman's Medical College, Baltimore; a member of the Medical and Chirurgical Faculty of Maryland, American Ophthalmological Society and American Otological Society, died at Johns Hopkins Hospital, Baltimore, March 19, from cerebral hemorrhage which occurred just after he had completed an operation the previous afternoon, aged 66.

DEFECTIVE SIGHT IN SCHOOLS IN MINNESOTA.—In an article in the *St. Paul Globe*, March 5, the percentage of school children of the State of Minnesota who have defective eyes and ears is alarmingly large. Results of a recent examination, conducted under the direction of the State Board of Health, shows that 15.66 per cent. of children examined have defective eyesight, and 2.7 per cent. have imperfect hearing.

The examinations upon which the results are based were made by the teachers of the schools, upon instruction given by the State Board. Preparatory to the examinations, a series of lectures on the eye and ear was given by a group of St. Paul and Minneapolis specialists in the state teachers' training schools. The teachers were instructed in the means of making accurate examinations, and blanks were later furnished by the State Board of Health.

All the schools to which the blanks were sent have not reported. A total of 14,403 pupils were examined, and 2,256 were found to have defective vision. The percentage is 15.66. Of the defectives, 135, or 6 per cent., were wearing glasses. Eight children were found to be totally blind in one eye, and one child was nearly blind in both eyes. From the same children examined, 390 were found to have defective hearing, or 2.7 per cent. of the total number examined by their teachers. One child was found to be almost deaf and dumb. Catarrh was found to be the cause of most of the cases of defective hearing.

Warnings were issued by the teachers to the children found to have poor vision and imperfect hearing. Cards were given the children showing what their condition was, and they were urged to seek medical attention.

The reports show that many of the children have already complied with their teachers' suggestions and have been fitted with glasses, while numbers of those whose hearing was found to be unsatisfactory have begun treatment for catarrh. Second letters have been sent to the parents of children who have not been diligent in attempting to relieve the unsatisfactory conditions.

The State Board of Health has determined to make the investigation of the vision and hearing of the school children of the state a permanent feature of its work each school year.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, MAY, 1905. VOL. XIV. NO. 5. NEW SERIES

Original Articles.

INJURIES FROM BURSTING OF LOCOMOTIVE WATER AND OIL GAUGES.

C. D. CONKEY, M.D.

SUPERIOR, WIS.

The present general interest in the welfare of railroad employes' eyes induces me to report a series of accidents coming under my notice within the last two years.

While much has been written about the visual acuteness and the color sense of the railroad man, yet little has been said about the eye accidents to which these same employes are subjected. Of these four accidents, three were due to the explosion of the glass water gauge and one to the oil gauge in the engine. While such accidents must be very common, I fail to find any attention given to them in medical literature.

The sudden explosion of a glass tube with great force, followed by a rush of steam, is disastrous to the unfortunate eye that comes within its range. There is nothing peculiar about these accidents. They doubtless have occurred throughout the country many times. My object in calling attention to them is to show the danger to which these servants of the people are subjected at the times when they are literally carrying many lives in their hands. Not only are the eyes of these valuable men ruined, and they for the future disqualified from carrying on their vocations as engineers, but all the lives of those carried by their trains are likewise imperilled by the sudden catastrophe to the man at the throttle.

The bursting of the gauge is an accident that can not be prevented as long as there is any defect in the material used, but the effects of the explosion can be prevented by the use of a wire netting fitting closely over it. This probably is being done by most of the roads, but up to a short time ago at least one of our large

transcontinental lines made no effort whatever to cover their gauges, and even now many of the engines are unprovided with this equipment.

While the crusade is being carried on so vigorously by some of our brother practitioners to secure better eye-tests and better signals, it might be well to give a closer attention to the conditions under which the engineer and fireman labor. It is in the interest of the railroad authorities to protect these water gauges, for the lines on which these accidents have occurred have recognized their liability and have settled all cases promptly with the men.

CASE 1.—Wm. H., fireman, injured June 30, 1902. Flying piece of glass from bursting water gauge struck left cornea, penetrating the anterior chamber and causing prolapse of the iris in the wound of cornea iridectomy iritis of several weeks' standing; ultimate recovery, with 20/40 vision.

CASE 2.—Wm. Kirk, engineer, Oct. 10, 1902, was injured by bursting of water gauge. Large piece penetrated the right eye, which he himself extracted. Eye was cut through its equator in almost a horizontal line, extending the entire width of cornea. There was much loss of vitreous, with corresponding collapse of the eyeball. Enucleation, followed by recovery.

CASE 3.—Wm. M., engineer, Sept. 15, 1903, was injured by bursting of water gauge. Large piece of glass struck him in the left eye; injury was followed by great reduction of vision. Examination revealed a hazy condition of the vitreous, evidently due to hemorrhage; vision greatly reduced. Treatment, potassii iodid and laterally nitrate pilocarpin. Vision steadily improved, and on October 19 the vision was restored to normal.

CASE 4.—On March 14, 1905, Harry T. was injured in the left eye by flying glass while repairing oil gauge on a locomotive engine. When seen there was a laceration of the cornea, with a septic wound and an anterior chamber full of pus. There did not seem to be a complete perforation; no glass seen in the eye. The corneal wound was thoroughly cleaned and its surface cauterized with cauter tip. Suppuration continuing, this was repeated thoroughly in a few days, after first making an incision through the entire length of the corneal wound with a cataract knife. The wound healed promptly and pus disappeared in the anterior chamber. This case is now under treatment, with a sharp iritis. A peculiar feature of this case has been the reappearance of hypopyon in the anterior chamber, occurring at intervals of about ten days, and then disappearing by absorption. The iritis is very persistent, with no signs of improvement, now in the eighth week. As the

corneal ulcer has entirely healed, the pus must spring from an infected iris or ciliary body, which greatly increases the gravity of the prognosis.

These four cases show how disastrously this class of injuries is and how needful it is that systematic efforts be made to prevent their occurrence.

A REPORT OF TEN CASES OF INTERSTITIAL KERATITIS.*

JOSEPHINE W. HILDRUP, M.D.

PHILADELPHIA, PA.

During the past year there have been nine cases of interstitial keratitis in the service of Dr. Charles A. Oliver at Wills' Hospital, in whose clinic I have the honor of working, and who has most courteously placed at the disposal of all his assistants any clinical material that may be desired.

CASE 1.—Negro boy, age 7, who never had had any eye trouble previous to two weeks before being seen. Vision with the right eye was reduced to one-sixth of normal. The cornea was steamy and hazy in places, with the appearance of numerous new blood vessels and channels; there was marked ciliary injection. The cornea of the left eye was hazy in spots from the upper limbus to the center, with slight ciliary injection below. No red glare from the fundus could be obtained in either eye. Boric-acid washings, atropin and hot stupes locally, with mercurial inunctions into the groins, were ordered. Coquilles were used to protect the eyes. Two weeks later the right eye was much better, while the left was in full-blast inflammation, with a salmon patch above. Six weeks after this both eyes were much improved, the treatment being still continued. The patient failed to report after this visit.

CASE 2.—White woman, who had been previously seen at the hospital for an attack of interstitial form of keratitis. She was readmitted, with a condition of secondary uveitis, which rapidly ameliorated under appropriate alterative treatment.

CASE 3.—White boy, age 8, who came to clinic with a vision of 1/50 of normal with the right eye and 1/30 with the left. When first seen, both corneae were found to be both superficially and deeply hazed; the irides reacted sluggishly to light, accommodation and convergence. Hutchinson's teeth were well marked.

*Read before the first regular meeting of the Association of Clinical Assistants of Wills Hospital, Jan. 18, 1905.

Ophthalmoscopic examination showed that both corneae were very hazy and needle-stuck, with plenty of red glare from the fundus, but no details of the eyegrounds were discernible; the conditions were less marked in the left eye. The usual clinical treatment was given, with the addition of hot stupes. The patient was last seen on July 7, 1904; at that time vision in each eye equalled 5/10.

CASE 4.—Colored boy, aged 6, who came to the clinic on June 15, 1904, with a vision of 5/10 with the right eye and 5/7 with the left eye. The only history of any eye trouble was that of his having stuck his finger in the right eye a few days before, and treatment had consisted of cold applications and tea leaves. When first seen it was noted that there was a scaphoid curve of the face. There was an interstitial haze of the right cornea in a series of islands up and in and down and out, the entire membrane appearing as if "needle stuck." The eye was too irritable for an ophthalmoscopic examination. Appropriate treatment was inaugurated, and on July 27, which was the last time the patient reported at clinic, the eye was much improved.

CASE 5.—White woman, age 23, who came to the clinic on July 15, 1904, with a history that, during the previous month of January, her right eye had become primarily sore, and later the left eye became affected. At the time of examination, vision with the right eye equalled 2/3 of normal and 2/45 with the left; both corneae were hazy, that of the left eye particularly so. The irides reacted to light, accommodation and convergence. There were well-marked Hutchinson teeth. The ophthalmoscope revealed the presence of a white haze in the deeper layers of the right cornea, without any gross changes in the fundus, while the cornea of the left eye was densely hazy in its deeper layers, so much so that no details of the fundus could be made out, although plenty of red glare was discernible. This patient left the clinic of her own accord without any treatment.

CASE 6.—White girl, age 8, who came to the clinic Aug. 27, 1904, having at that time a vision of 2/3 of normal in each eye. She did not give any other history of eye trouble, but came to have her vision improved by glasses. In both eyes the corneae were maculated to the temporal sides, there was pericorneal injection with marked secondary conjunctivitis, the irides reacted equally and freely to light, accommodation and convergence. Ophthalmoscopic examination failed to show any gross changes in the fundi, and the usual clinical treatment was given. On December 21 of the same year the report read "interstitial opacities almost gone in

the left eye, but still marked in the right." When last seen, on January 4 of the present year, the improvement was still more pronounced. Treatment was continued, and the patient was told to continue and report to the clinical service.

CASE 7.—First seen Oct. 17, 1904. The patient was a white boy, age 6. He was brought to clinic by his mother, who stated that the child had never had sore eyes until two weeks previously. The right eye was found to be too irritable to obtain the vision. The vision of the left eye equalled $\frac{1}{4}$ of normal. The right cornea was very hazy, and the iris was muddy and did not seem to react to light stimulus; ciliary injection was pronounced. Ophthalmoscopic examination of the right eye showed only a reddish reflex. The cornea of the left eye was clear, and there were not any gross changes in the organ. The case did not report later.

CASE 8.—Colored boy, age 17, who had a vision of 2/100 in each eye. He reported to the clinic on Oct. 31, 1904, with the statement that he had never had sore eyes until two weeks previously. The corneae were very hazy, with a well-marked interstitial form of inflammation, and irides reacted very sluggishly to light. Both the scleral and the conjunctival vessels were highly injected; lacrymation and photophobia were marked. Ophthalmoscopic examination showed evidences of interstitial keratitis, so pronounced that the retinal vessels could only be determined through the upper inner quadrant of each cornea. The treatment prescribed was atropin, boric acid, sulphate of quinin and coquilles. When last seen, on January 11 of the present year, vision with the right eye equalled $\frac{2}{3}$ and that of the left eye $\frac{1}{2}$ of normal; the eyes were almost well.

CASE 9.—White boy, age 6, was first seen at the clinic on Nov. 6, 1904. The vision of the right eye equalled $\frac{1}{2}$ of normal, while that of the left equalled $\frac{1}{3}$. There was no history of eye trouble previous to five months before being seen, when the right eye became sore, the left eye becoming involved one month later; these conditions followed an attack of measles. The child had been under treatment at another hospital at the time when the right eye first became sore. There was a marked interstitial keratitis in both eyes, the irides reacting sluggishly to light, accommodation and convergence. A deeply-seated corneal haze, which was more marked in the center of the membrane, was seen in both eyes, and, although there was plenty of red glare, no fundus details were discernible with the ophthalmoscope. When last seen, on January 6 of this year, it was found that the ocular conditions had much improved.

CASE 10.—This case is taken from one of the eye clinics at the Woman's Hospital of Philadelphia, and is offered on account of the age of the patient, a white woman, widow, age 58. She first appeared at the clinic on Jan. 21, 1904. At that time she had a vision of $\frac{1}{8}$ of normal with the right eye and $\frac{1}{6}$ with the left; had none of the characteristic changes of interstitial keratitis. She complained of photophobia, lacrymation, frontal headache and failing sight, and stated that she had never had a miscarriage and that she had three children, all of whom were living and in good health. She "suffered from shooting pains," but they were not confined to any particular area of the body. When first seen, the corneæ were found to be clear, the irides reacted sluggishly to light, accommodation and convergence, and there was a slight left ptosis. The ophthalmoscope revealed numerous floating opacities in the right vitreous; otherwise the media was clear. The optic disc edges were everywhere obscured, the retinal vessels were contracted and their walls were thickened. The disc substance was very gray, especially in the deeper layers, and the retina was everywhere hazy. The conditions in the left eye were similar, only less marked. Both series of visual fields were contracted, with pieces bitten out; in the right eye the red and the green fields overlapped; urinalysis was negative. Under alterative treatment and strychnia, both the vision and the ptosis improved. The patient then disappeared from clinic and was not again seen until Oct. 22, 1904, when she stated that her eyes, especially the left one, had been sore for the previous week or so. At the time of examination, vision of the right eye equalled $\frac{1}{10}$ of normal, while that of the left eye equalled one-half fortieth. The left cornea was very hazy, especially in the deeper layers and centrally. The left iris did not respond to light, and there were both ciliary and tarsal injection with ptosis, the cornea of the right eye was less hazy, and the iris responded slightly to light stimulus, accommodation and convergence; lacrymation and photophobia were marked in both eyes, and ciliary tenderness was present in the left eye. The ophthalmoscope showed that the right cornea was hazy in its deeper layers, though no fundus details could be determined. The left cornea was hazy and "needle-stuck," with a leash of vessels situated above and below; there was a greenish-gray reflex, but no fundus details were discernible. Examination for the plasmodium of malaria gave negative results. To the same clinical treatment as given in the other cases were added 20 grs. of iodid of potassium three times daily internally and yellow oxid of mercury salve to the left eyelids. The atropin which had been used in the right eye was

stopped on Nov. 22, 1904. Listerin mouth wash was given. Atropin was stopped in the left eye four days later, and bichlorid of mercury, in 1/30 gr. doses, three times daily before meals, was substituted for the inunctions. The iodid of potassium was increased to 30 grs. after meals. When last seen, on January 4 of this year, the corneæ were nearly clear, and vision in each eye equalled 1/5 of normal. The ptosis had almost disappeared. The patient's refractive error being corrected, vision was brought to 2/3 in each eye.

In summing up these cases, the first point noted is the age, which ranges from 6 to 23 years, with the one exception; it is of interest, also, that six of the ten cases are boys, three being negroes.

As to the cause: In several of this series (the majority, it may be said) the Hutchinson teeth and the peculiar formation of the face have been observed and noted, while in the 17-year-old colored patient quinin was the curative agent. In the case of the 58-year-old patient she was carefully studied for rheumatism, gout, influenza, impaludism, and uterine affections, with negative results, but, having received alterative treatment, she is almost well.

The statement that in the acquired forms of the disease the duration of the disorder is of a shorter period of time than those which are hereditary seems to be borne out by this study.

AN INSTANCE OF PARINAUD'S CONJUNCTIVITIS.

O. A. GRIFFIN, M.D.

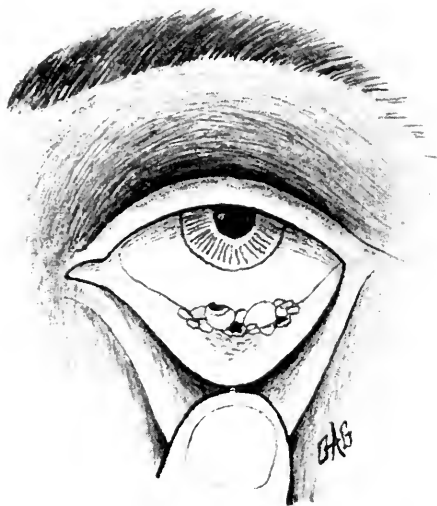
ANN ARBOR.

(Illustrated.)

On Nov. 1, 1902, Miss B. C., aged 14 years, daughter of a druggist, was brought to me for consultation regarding the condition of her left eye, which, save for a fullness of the lower lid, apparently presented a normal appearance externally. Her father stated that, about two weeks previous, her left eye alone became suddenly inflamed, attended with pain, photophobia, a marked swelling of the lids, and a profuse watery discharge, which became purulent in the course of a couple of days. This condition obtained only a few days under the simple course of treatment which he employed, when the inflammation and discharge rapidly diminished. During the following week, however, the eye appeared slightly irritable, especially within the lower lid, attended with a feeling of fullness in that region, which was sufficiently annoying to lead to a consultation.

On eversion of the lower lid, the following condition, as illus-

trated in the accompanying cut, was presented: Situated on the retrotarsal fold was a mass of polypoid granulations, between which were observed a few areas of superficial ulcerations. An erosion was also present on one of the larger granulations. The two larger granulations, which rested on either side of a large central ulcerated area, were somewhat pedunculated and presented an anemic translucent appearance, while the smaller granulations were reddish-gray in color and irregular in outline. A small amount of thick, glairy secretion obtained about the peduncle of the larger granulations. Aside from these alterations and a slight injection of the ocular portion in the region of the lower fold, the conjunctiva presented an otherwise normal appearance.



Parinaud's conjunctivitis.

Treatment of the condition was instituted. This consisted in a removal of the larger granulations by means of scissors and a subsequent daily application of argent. nitrat., grs. xx ad oz., to the remaining granulations. In the course of a week, however, when the granulations were rapidly disappearing under the above treatment, it was observed that the pre-auricular glands on the corresponding side of the head (left) were rapidly enlarging and becoming painful to the touch, as well as to motion of the jaw. About this time a slight fever developed, attended with a feeling of depression. As the swelling of the pre-auricular glands increased, the submaxillary and a few of the cervical glands also showed evidences of infection. After assuming alarming propor-

tions, resolution gradually occurred within a couple of weeks without suppuration, although at the height of disorder this termination seemed improbable. By the time the swelling of the glands had disappeared, the granulations on the retrotarsal fold had vanished, leaving naught to indicate their former position or existence.

Regarding the etiology of this case, so far as I have been able to ascertain, there was no evidence of a possible animal origin of the infection, unlike the several instances which Parinaud has reported to the contrary. Whatever be the origin of the disorder, however, it is certainly unusual, as attested by the rarity in occurrence of the disease.

ANOTHER CASE OF PAPILLOMA OF THE CONJUNCTIVA.

RICHARD H. JOHNSTON, M.D.

Assistant Surgeon and Pathologist to the Presbyterian Eye, Ear and Throat
Hospital; Demonstrator of Laryngology in the University of
Maryland School of Medicine, Baltimore.

BALTIMORE, MD.

In the past three years several cases of papilloma of the conjunctiva have been recorded in this country. I am satisfied that, with the examination of all tissues removed from the eye, the number will be materially increased. The third case at the Presbyterian Hospital since the opening of the laboratory has just been examined. The tumor was removed by Dr. H. Harlan, who referred it to me for microscopic examination. It was about the size of a pea, and was attached by a narrow pedicle to the conjunctiva of the lower lid at about its center. After removal the surface showed numerous papillæ, and the diagnosis of papilloma could be made macroscopically. The tumor was hardened in alcohol, embedded in celloidin, sections cut and stained with hematoxylin and eosin. The section consisted essentially of connective tissue and epithelium. The connective tissue ran up from the base of the tumor in a central mass and sent off processes on both sides. These processes were surrounded by layers of epithelium, squamous, ovoid and cylindrical, from without inward. The nuclei of the epithelial cells stained more deeply the nearer they were to the connective tissue. The nuclei of the squamous layer stained very poorly or not at all. The section was rather poor in blood vessels.

It is unusual to see such a typical specimen of papilloma of the

conjunctiva. In the large majority of cases these tumors are found in males. In a collection of 24 cases, only 2 were females. All ages are attacked. The growth should always be removed immediately and thoroughly. Recurrence is quite common.

A CASE SIMULATING TOXIC AMBLYOPIA.

J. WILLIAM PANCOAST, M.D.

Chief of Clinic, Eye Department, Pennsylvania Hospital; Ex-Assistant Surgeon, Wills Eye Hospital; Ex-Assistant, Union Mission Hospital.

PHILADELPHIA.

CASE 1.—W. S., age 19, consulted the writer on Jan. 5, 1896, complaining of a gradual loss and cloudiness of vision, inability to apply himself to near work, even for short periods of time, vertigo, insomnia and the symptoms of asthenopia. He was of ideal physique, without an ounce of superfluous flesh, and in perfect general condition. The use of tobacco, alcohol or any of the toxic poisons was denied by the patient. The truth of this was verified by carefully questioning his parents and a close friend. The first symptoms were noticed about three months before seeking advice.

The external examination of the eye and muscles was negative. Vision of R. E.=5/45. L. E.=5/150. Ophthalmoscope showed the right nerve of fair size and shape, with a very pale area down and out, hyperemia of nasal side of disc, C.H.A.+1.00 D. The left disc was the same as the right, except that the entire temporal half was extremely pale, C.H.A.+1.50. Refraction under atropin gave: R. E.+1.00s=+0.37 c x 80=5/30. L. E.+1.00s=+0.75 c x 90°=5/100. Fields showed a relative central scotoma for red and blue; form fields were normal in each eye. The scotoma in the left field was larger and more sharply defined than in the right.

The usual treatment of strychnia and iodids was given, without any improvement and probably with a slight loss of vision. It was now decided there must be some unusual cause, and after much trouble the following data was gained: About three years before the onset of the above conditions a young French child's nurse was taken into the family and given a room, separated from the patient's by a large storeroom. The three rooms, however, were communicating, and, though the doors had all been locked, it was not a hard matter to find a key which fitted all locks, and a liaison started, characterized by great excesses.

By regulating as far as possible the sexual conditions and the continued use of strychnia with the iodids, both eyes regained

normal vision in about six weeks, making a little less than four months that he was under observation. He was not seen again until 1901, when he was about to go abroad on a long business trip. His vision was the same as when discharged in 1896: R. E. 5/6, L. E. 5/5. He assured me there had not been any return of his ocular condition and he appeared in perfect health. Within the past few days his brother was in to see me and gave me the final history of the case.

While in Japan he contracted syphilis, which was treated there and later in Paris, where he was discharged as cured. In January, 1904, his old ocular condition returned, to some extent with rapid loss of vision to total blindness, and in November of that year he died suddenly from a supposed gumma of the brain. The necropsy showed a large fibroid growth, but not a sign of gumma.

The writer reports this case as an unusual one and as containing the question: Could the condition of 1896 have been caused by the starting of this final growth, instead of by the excessive venery which at that time appeared to be the only cause? Personally, I believe the conditions to have been entirely separate, as I can not conceive how a growth could have remained quiescent for eight years, and during that time allowed the vision to readjust itself to normal.

THREE courses at an ophthalmic college are offered in an advertisement inserted in the columns of a dignified medical journal published in a neighboring city. One of these courses is described as being for opticians, one for refraction doctors, and one for physicians. It would seem, therefore, as if there were three kinds of ophthalmology, nicely adapted to the special needs of three kinds of scientists. One would like to learn just what kind of a doctor it is who is called a "refraction doctor" and how he differs from a "physician." And, as the opticians in the state wherein is located this "ophthalmic college" are making strenuous efforts to obtain legal permission to practice medicine without having studied medicine, the further question may be asked as to what constitutes an optician doctor. These three, the optician doctor, the refraction doctor, and the physician doctor, but which is preferred by the publisher and editor of "our esteemed contemporary" which accepts the advertisement of the "ophthalmic college?"—*Amer. Med.*

Correspondence.

A STUDY IN BIBLIOGRAPHY.

To the Editors:—In the *Centralblatt für Praktische Augenheilkunde* of October, 1904, is a notice of the Ophthalmic Year Book. In this notice one-half dozen authors are taken, apparently at random, and a comparison made of the references to their writings found in the Year Book and in the corresponding volume of the *Centralblatt*. The comparison reads as follows:

	Year Book.	Centralbl. f. Augenheilk.
E. Fuchs	1	3
Axenfeld	3	6
De Lapersonne	6	7
Parsons	8	9
Cirineione	5	8
H. Knapp	1	1

Prof. Hirschberg has done so much, and such valuable work, for the bibliography of ophthalmology that the criticism implied in his table seemed specially worthy of attention. I have, therefore, taken time to look up the references in the *Centralblatt*, hoping to find in what directions the Year Book was most defective. The result is, perhaps, less instructive than amusing. It reminds one of Lowell's phrase about the "condescension of foreigners." It will be remembered that the Year Book covered the literature for 1903, and that the *Centralblatt*, including its supplement, which appeared several months after the close of the year, was supposed to cover the same period. I found that the three references in the *Centralblatt* to papers by Fuchs are to the one mentioned in the Year Book and to two papers published in 1902. Of the six references to Axenfeld, three were found in the Year Book, two belong to the literature of 1902, and one was to a paper on "Ophthalmia Neonatorum" published in a general medical journal. This latter paper was of the class thus alluded to in the preface of the Year Book; articles which bring to the attention of the profession at large facts and views already found in ophthalmic literature. These articles, published chiefly in general medical journals, may be of the highest benefit to a large proportion of their readers, but they require no notice in this work.

Of the seven references to de Lapersonne, two belong to the literature of 1902, and one was to an eulogy to his predecessor, Panas. Of Parsons' nine papers, three belong to the literature of

1902. Of Cirincione's, two belong to 1902, one was a controversial letter to Prof. Tartuferi, and another was a duplicate reference to an article that had been published in two journals.

It will be noted that all the writers in the above list, except H. Knapp, were Europeans. The question suggested itself. Had the *Centralblatt* dealt as liberally with American writers as the Year Book had with those of Europe? A comparison showed the following:

	Year Book.	Centralbl. f. Augenheilk.
Alex. Duane	6	3
Friedenberg	5	1
F. C. Hotz.....	3	1
C. R. Holmes.....	1	0
Arnold Knapp	3	0
Geo. M. Gould.....	5	0

A further examination showed that of the 164 American authors referred to in the Year Book, 64 were not mentioned in the *Centralblatt*; and these included such men as C. H. May, A. R. Baker, J. H. Claiborne, Hasket Derby, F. W. Marlow, E. A. Shumway, W. T. Spiller, and J. T. Thorington, all of whom had made valuable contributions to ophthalmic literature during 1903.

In the way of suggesting improved methods for bibliographic work, this study of "German thoroughness" was disappointing; but it was rather soothing to one who felt regret for the shortcomings of the Year Book.

EDWARD JACKSON.

H. V. WURDEMANN'S "THE MEDICOLEGAL RELATIONS OF OCULAR INJURIES, PENSIONS AND INSUR- ANCE RATES, AND A SCIENTIFIC PLAN FOR ESTIMATION OF THE EARN- ING ABILITY."

FREIBURG, GERMANY, March, 1905.

To the Editors:—In the January, 1905, number of *Ophthalmology*, Dr. H. V. Würdemann discusses the same propositions which he presented at the last International Ophthalmological Congress at Lucerne. He says that "the calculations and rules of Magnus, as modified by the author, afford a method of estimating the amount of the probable economic damage in a manner fair and just to all parties, and agreeable to all legal demands." Now follows a bibliography of 11 numbers.

It seems strange that Würdemann in this paper should make no mention of criticisms which were made on his paper at Lucerne.

Moreover, in his bibliography all papers are omitted which criticised the principles of Magnus, and which proved that his formulas and calculations are incorrect in many ways. For example, in Germany the methods of Magnus are nowhere recognized; in fact, it is believed that it is impossible to express mathematically the real earning capacity of various individuals.

At the time when the English edition of Magnus' book by Würdemann appeared (1902), it was remarked in Germany that those papers which have been written since 1897 criticising Magnus were ignored. But if Würdemann now repeats the same, although in the Transactions of the International Ophthalmological Congress it was shown that his bibliography is insufficient, one feels that it is necessary to protest in order that our American colleagues can form a correct opinion; otherwise the intended discussion at the next International Ophthalmological Congress would be useless.

I, therefore, bring before the notice of your readers the titles of all those papers and monographs which are not mentioned by Würdemann. In this list I leave out those of only national or special interest, which one can not expect to find in every bibliography. For analysis of these papers and books, which can not be given here, I must refer you to the critical report in the Transactions of the International Ophthalmological Congress at Lucerne.

As long as Würdemann avoids discussion with this literature and the criticisms contained therein, his thesis that the Magnus-Würdemann formulas are right is worthless. But if he takes part in these criticisms, then I believe he will be obliged to give up his statement that "the relation of the visual act to the earning ability is susceptible of mathematic demonstration."

I remain, yours truly,

PROFESSOR AXENFELD.

BIBLIOGRAPHY.

Ammann, E.: Die Begutachtung der Erwerbsfähigkeit nach Unfallverletzungen des Sehorgans. München, 1900, J. F. Lehmann.

Amman, E.: Zur Kenntnis der Erwerbsverhältnisse der Augeninvaliden. Zeitschrift f. Augenh., VIII, 1902, S. 537.

Becker, T. (Düsseldorf): Der Entschädigungsanspruch des Arbeiters bei Augenverletzungen. Arbeiterversorgung, 1901. S. 1.

Bestimmung der Grades der Erwerbsunfähigkeit bei Verlust der Sehkraft auf einem Auge. Nach den Entscheidungen des Reichsversicherungsamtes zusammengestellt. Aerztl. Sachverständigen-Zeitung, 1897. S. 163.

Librik: Ueber Erwerbsverminderung bei Augenverletzungen. Inaug.-Dissert., Berlin, 1897 (unter Sillex).

Brandenburg: Ueber Augenverletzungen in landwirtschaftlichen Betrieben. Zeitschrift f. Augenh., 1901, S. 345.

Braunstein: Ueber die Verminderung der Erwerbsfähigkeit bei Augenverletzungen. VIII Pirogoff'scher Kongress. Zeitschr. f. Augenh., VII, 1902, S. 486.

Cramer, E.: Ueber das Rentenwesen bei landwirtschaftlichen Augenunfällen. Monatsschrift f. Unfallheilkunde, 1901 (ref. Aertz. Sachverständigen-Zeitung, 1901, S. 379).

Cramer, E.: Die Unfallfolgen im Gebiet der Augenheilkunde. Thiem, Handbuch der Unfallkrankungen, 1900.

Deschamps: Comment apprécier l'incapacité partielle permanente de travail qui succède aux blessures de l'oeil? Soc. d'ophth. de Paris. La Clinique Opht., 1901, page 89.

Fischer, E.: Praktische Seite der Unfallversicherung. Versammlung rheinisch-westfälischer Augenärzte. Klin. Monatsbl. f. Augenh., February, 1904.

Gorecki: Les accidents du travail concernant l'appareil de la vision au point de vue hygienique et médico-légal. Thèse de Paris, 1901.

Grolman, von: Der gegenwärtige Stand der Unfallentschädigungsfrage bei Augenverletzungen. Zeitschr. f. prakt. Aerzte, 1897, Nos. 17-21.

Hummelsheim: Ueber die Frage der Werteinschätzung des Verlustes, resp. der Sehschädigung eines Auges. Vers. Rhein.-westfäl. Augenärzte, Monatsblätter f. Augenheilk., February, 1904.

Veröffentlichung des Reichs-Versicherungsamtes. Stellungnahme zur Abschätzung des Verlustes eines Auges nach Prof. Dr. Magnus. Aertztl. Sachverständigen-Zeitung, 1897, No. 2, S. 38.

Malakoff: Ueber die verminderte Erwerbsfähigkeit Einäugiger. VIII Pirogoff'scher Congress. Zeitschr. f. Augenheilk. VII, 1902, S. 486.

Maschke: Die augenärztliche Unfallpraxis. Wiesbaden, J. F. Bergmann, 1899.

Müller, A. (Tübingen): Ueber Abschätzung der Erwerbsbeschränkung durch Schädigung des Sehorgans bei Unfallverletzten der landwirtschaftlichen Berufsgenossenschaft. Inaug.-Dissert. Tübingen, 1901.

Natanson, A.: Ueber die verminderte Erwerbsfähigkeit der Arbeiter bei Augenverletzungen und deren Bewertung bei Entschädigung. Ophthalmol. Sektion des VIII Pirogoff'schen Congresses, Moscow, 1902 (Zeitschr. f. Augenh., VII, S. 484. Bericht von R. Puttata Kerschbaumer).

Natanson, A.: Vestnik oftalmologii, 1904, Nos. 1-3.

Peters: Erfahrungen auf dem Gebiet der Unfall und Invalidenversicherung. Münchener med. Wochenschr., 1902, S. 1187.

Pfalz: Reele und eventuelle Unfallfolgen. Zeitschr. f. Augenh., II, 1899, S. 516.

Pfalz: Zur Unfall und Sachverständigenkunde. Zeitschr. f. Augenh., V, 1901, S. 72.

Praun: Die Verletzungen des Auges. Wiesbaden, J. F. Bergmann (Abschnitt Unfallversicherung).

Schleich: Störungen durch Unfall und Beschränkung der Erwerbsfähigkeit nach Unfällen. Med. Korrespondenzblatt des Württembergischen Ärztevereins, 1890, No. 23.

Schmidt-Rimpler: Ueber binokulares, Stereoskopisches und körperliches Sehen bei einseitiger Aphakie und einseitiger Sehschwäche unter Berücksichtigung der Unfallgesetzgebung. Wiener med. Wochenschr., 1899, No. 43 (Vortrag auf der 71. Versammlung deutscher Naturforscher und Aerzte in München, 1899).

Sutzer: Rapports sur l'acuité visuelle et l'incapacité de travail. Congrès de Paris, 1904.

Truc: Valeur pratique de l'acuité visuelle 0.1. Congrès français d'ophtalmologie, 1904, cf. Klin. Monatsschr. f. Augenh. XLII, No. 1, S. 585.

Weymann: Veränderungen der Verhältnisse bei Verlust eines Auges. Erhält ein durch Unfall Einäugiger eine höhere Rente, wenn er unabhängig vom Unfall das andere Auge verliert? Die Arbeiterversorgung, 1901 u. 1902, No. 10.

Von Zehender: Nachschrift zu Schlosser's Referat über von Grolmann. Ibidem, 1898, S. 312.

DR. WURDEMAN'S REPLY TO PROF. AXENFELD'S LETTER.

MILWAUKEE, April 14, 1905.

To the Editors:—I am rather surprised to find by Professor Axenfeld's open letter of February 9 that my essay on "The Medico-

Legal Relations of Ocular Injuries" is open to criticism of incompleteness. My thanks are extended to him for the enlarged bibliography, each and all of which essays I shall endeavor to consult before writing further on the scientific aspects of this subject. In defense of these elisions, I wish to state that, not only for the book of Magnus & Würdemann, "Visual Economics," published in 1902, but also for my last essay, published in *Ophthalmology* in January, 1905, I endeavored to include in the bibliography and in the essay comments upon all the literature on this subject to the date of publication from all sources at my command.

Despite the letters of inquiry sent abroad to those supposed to be authorities on this subject, I have not been favored with specific replies. I have not even yet received a copy of the Transactions of the Ophthalmological Congress, although I was a member of the committee to report upon this particular subject with Axenfeld and Sulzer. The manuscript of my essay was returned to me, and I supposed was not published in the Transactions. See the following correspondence:

(Cablegram, dated at Lausanne, Switzerland, July 8, 1905.)

"Committee deeply regrets impossibility printing whole report. Letter explains."

(Signed) DUFOUR.

In response to the above I sent cable message to print the whole of the essay at my expense, and wrote a letter inquiring expense. The following cablegram received:

"Participeriez vous environ 800 francs."

(Signed) DUFOUR.

Upon receipt of the above cablegram, I sent the 800 francs, and under date of August 15, the following letter was written from Lausanne:

The last committee meeting at Lucerne was obliged to consider the printing of your report under the difficulty of the printing office, which is overcharged. Therefore, with all the best good will on our side and the good generosity on your side, which we must greatly admire, it happens that we shall not be able to print the already printed essay you have sent to us, and that we shall not use your money to our profit. As soon as I can I shall return it to you or give it to you if we have the pleasure of seeing you at Lucerne, when we shall thank you and explain our impossibility to print all, and to thank you very much for the important and beautiful work. All that is printed seems to make a very becoming article.

(Signed) DUFOUR.

Owing to the establishment of the new journal—*Ophthalmology*—I was kept from attending the Congress, and circumstances have been such that I have not been acquainted with its proceedings,

except through abstracts published in the OPTHALMIC RECORD and elsewhere.

I again assert, however, that the results of our computations agree very closely with the verdicts of our American juries and the rates given by accident associations, and I am yet convinced that a definite relation exists between the loss of sight and the earning ability, to which no better method of computation has yet been offered than the modified formulæ of Magnus.

Yours truly,

H. V. WURDEMANN.

WHY STRADDLE THE FENCE?

Editors Ophthalmic Record. Dear Sirs:—The timely editorial in the current number of the RECORD, entitled "Why Straddle the Fence." I have just read with much interest, and think that the suggestion to educate the public through the general practitioner strikes, at least, very near the root of the matter. I say very near, for the reason that it seems to me the ultimate radical of this question reaches back to the doctors' earliest education in matters ophthalmic, viz., the medical college, and it appears to me, if the teacher of diseases of the eye in the colleges of medicine, who always enjoy the distinction of having the willing ear of the student, were to bring this matter forcibly to his notice, not once, but many times during his medical college career, enforcing his arguments by facts and illustrations which the student can well understand, it would not be many years before there would grow up a body of medical men who would use their influence with the public in such a manner that the "O. O. C. P." referred to in this article would be able to find some other calling more profitable and greatly to the benefit of the public.

Yours truly,

H. V. WÜRDEMANN.

INDIRECT ORGAN THERAPY OF EXOPHTHALMIC GOITER.—The leading article in the first number of the new German medical periodical, *Medicinische Klinik*, is by von Leyden. It reports very satisfactory results obtained in a number of cases of exophthalmic goiter by administration of the active substance isolated from the milk or blood of goats deprived of the thyroid gland. Burghart, Blumenthal, Madsen of Copenhagen and Möbius of Halle have each experimented in this line, the latter using the blood of thyroidectomized wethers for subcutaneous injection or ingestion per os. Madsen gives the dried blood of thyroidectomized goats, Burghart, the active substance isolated from the milk.—*Jour. A. M. A.*

Reviews.

THE CONSERVATIVE MANAGEMENT OF LACRYMAL OBSTRUCTION.*

S. D. RISLEY, M.D.

PHILADELPHIA.

[Reviewed by E. C. Ellett, M.D.]

It is a trite fact in medicine that the more different plans of treatment we find advocated for any condition the more unsatisfactory are all plans likely to be. In ophthalmology this probably applies especially to disorders of the lacrymal drainage apparatus, and for this reason a scrutiny of the methods advocated by the above paper may not be without profit.

After a consideration of the anatomy of the parts, brief mention is made of the obstruction that lies in the puncta, for which dilatation is advised. It occurs to us that it would be well to do this as a first step in all cases of simple epiphora, as, even without irrigation, very satisfactory results are often obtained, and it is no small satisfaction to feel that, in the event of failure, we have at least not made matters worse. In some cases where this does not suffice, the nicking of the punctum or removing a small piece from its back wall answers every purpose.

When dacryocystitis exists, the advice is given to try, by injection of a few drops of cocain and then adrenalin chlorid, to gain an entrance to the nose for solutions from the lacrymal canula. It would seem that this could be as well or better done with intact puncta and canaliculi, since they fit the canula snugly and make the passage of the solution to the sac more certain. We appreciate the writer's solicitude to avoid the beginning of probing, since it must always remain a procedure whose end, both as to time and result, is difficult to foretell.

The essence of the article lies in the preference for small over-large probes. These terms are tolerably definite in their meaning to most of us, and probably most of us do not go to the extreme either way. The passage of a No. 1 and No. 2 probe is, as the writer observes, a delicate procedure, apt to result in a false passage, while larger than No. 8 T. is seldom to be passed without more force

* Transact. Oph. Sect. A. M. A., 1904.

than most of us care to use. The use of canulæ and lead or silver styles is not spoken of in this paper, and, except for temporary use after a Stilling's operation, are, to our mind, justly relegated to the rear. Canulæ rarely drain, and both canulæ and styles cause a good deal of irritation. We have seen their use followed by the production of granulation tissue and, finally, a cicatrix which contracted to make the last end of that duct worse than its first. After a Stilling's operation, the passage of a probe is very painful, and here a style (since it is easier fitted than a canula) can be worn a few days with advantage. Following this, the systematic use of probing, as suggested by Wood and Woodruff, is very satisfactory. This plan is for the surgeon to carry out the probing for two weeks, and then instruct the patient in its performance, with directions to pass the probe daily, on alternate days, etc., at lengthening intervals, till the cure is complete. This prevents the dissatisfaction that must follow an almost endless number of visits to the physician, and divides with the patient some of the responsibility for the result. Some persons are too timid to try to learn to pass a probe on themselves, and many patients are presbyopes, which makes it necessary for them to do their probing with glasses on, an awkward performance, but it can usually be accomplished. For chronic or relapsing abscess of the sac, we feel that the popular tendency toward removal of the sac is a proper procedure.

Much stress is laid on the condition of affairs at the nasal end of the duct. That obstruction often exists there, and there only, has doubtless been demonstrated many times in probing, but without probing its diagnosis must be very difficult. In common with many other writers, the author has not given us the detailed statement we would like in regard to the pathologic conditions found and the precise methods resorted to to cure them. In inspecting the nose to see if the lacrymal probe has passed through proper channels and into the nose, we have all doubtless often found it impossible to see the probe, though it can be plainly felt by another pushed under the inferior turbinate. If this condition obtains often, as is our experience, it does not seem feasible to inspect the nasal end of the duct in many noses and to make out the folds of membrane and other abnormalities which are described as occluding it. A general hypertrophic condition of the turbinates, with crowding of the lower one against the outer nasal wall, might occlude the duct and could, of course, be easily recognized, but few patients in whom we find this state of affairs have epiphora, and we regret that a more extended description of these points was not given, especially since they are usually slighted or dealt with

only in the most general terms. Killian has designed a long nasal speculum which is supposed to enable us to inspect these out-of-the-way regions in the nose, but even with its aid we have not been able to do so with sufficient satisfaction. These remarks apply equally to the discussion which followed the paper.

The description of a very efficient lacrymal dilator and syringe concludes the article.

SOME PRACTICAL ASPECTS OF CONJUNCTIVAL BACTERIOLOGY.

BY FREELAND FERGUS, M.D., F.R.S.E.

[Reviewed by W. Gordon M. Byers, M.D., Montreal.]

Ophthalmology has been enriched during the past few years by a large number of valuable data in regard to the conjunctiva in health and disease. "Thanks to the pathologists, we now have clearer ideas as to the nature of the many forms of conjunctivitis, which, in days gone by, were all classed together as catarrhal ophthalmia, and were for the most part put down to exposure to cold, or to other indefinite causes." We are not yet in a position to formulate a bacteriologic classification of conjunctival inflammations, because the bacteriology of several forms of conjunctivitis (*e. g.*, phlyctenular conjunctivitis and trachoma) has not yet been satisfactorily worked out.

The amount of acquired information, however, is already so considerable that we can deduce therefrom numerous practical points in regard to the treatment of this important class of diseases of the eye. Dr. Fergus emphasizes in this paper "the necessity and utility of daily bacteriologic work in the modern eye clinic," and points out ways in which a bacteriologic examination can be made of practical service.

"Bacteriology," says Dr. Fergus, "should be in daily use in every eye clinic, first, because it is an important aid to diagnosis; secondly, because it is a guide in determining the safety of an operation, and, thirdly, because it materially influences our views of treatment."

Bacteriologic examination would frequently permit us to know early in the course of an acute inflammation of the conjunctiva whether we had to do with a serious gonorrheal conjunctivitis or with some milder inflammation, as, for instance, that due to the Koch-Weeks' bacillus. We should be at once in possession of clear ideas as to the prognosis in any given case, and our therapeutic

efforts would be at the outset proportionate to the gravity of the condition.

Dr. Fergus has long been aware of the importance and necessity of bacteriologic investigation of the conjunctiva prior to operative procedure. "I have," he says, "no doubt whatever that disaster can often be prevented by a thorough bacteriologic investigation before attempting to operate, yet, odd to say, so far as I have perused the ordinary text-books, there is not one of them which mentions anything of the kind. We are given abundance of directions as to how to prepare patients, what kind of diet they are to have, what medicine is to be given them the night before. Full and explicit directions are sometimes given even as to the special kind of knife to be used, as if that, in the hands of a good operator, were a matter of much importance; and yet not one of the text-books with which I am acquainted advises the operator to look carefully before he leaps and to make bacteriologic investigations before operating on any eye. * * * It may be said, as a general rule, that no operation should be performed until such investigations have been made by a reliable observer."

To illustrate his meaning, Dr. Fergus cites a few concrete examples. About the year 1896 a patient was sent to him from the south of Ayrshire. One eye had already undergone the operation of cataract extraction, but the result had been an intense suppuration, with loss of the eyeball. Before undertaking the extraction of the other lens the conjunctival fluid was examined, with the result that streptococci were found on both sides. These, however, were got rid of from the sound eye, and the case was then operated on and good vision obtained. In a second instance, panophthalmitis followed extraction in a case of cataract, complicated by tear-sac trouble. To all appearances the conjunctiva was in a normal condition before the operation, but bacteriologic investigations would, no doubt, have revealed the presence of streptococci, as they were present in the discharge after suppuration occurred. In a third case, in which panophthalmitis had occurred after extraction of the lens, routine bacteriologic examination revealed abundant streptococci in the conjunctival fluid of the remaining eye. A period of two weeks passed before the condition of the conjunctiva warranted operation, which was then done in the usual manner by combined extraction, a large conjunctival flap being cut. For the first ten days the patient was absolutely free from all pain, and the wound healed rapidly and well. At the end of that time, however, there occurred a streptococcus conjunc-

tivitis, but fortunately the wound was firmly united and the eye was beyond risk so far as vision was concerned.

In further illustration of this point, Dr. Fergus cites the cases of three children, all affected by very similar injuries. In each there had been a penetrating wound of the cornea followed by traumatic cataract. One of the eyes in which *staphylococcus albus* only was found made an excellent recovery; but another, in which the conjunctiva was infected by *pneumococci*, developed an iridocyclitis with hypopyon and had to be enucleated; while a third, with a mixed infection of the conjunctiva, was extremely irritable and marked by an acute catarrhal condition of the conjunctiva.

Speaking of the use of bacteriologic investigations as regards treatment, Dr. Fergus says: "Pathologic research, however important and interesting from a biologic point of view, can not be regarded by the practitioner as an end in itself. Whatever it may have of intrinsic value to the man of pure science, to any one who is studying disease with a view to its cure or amelioration it is only a means to an end, and that end is rational treatment." Further, "that the newer views of etiology of the conjunctival diseases have caused their treatment to be regarded from two separate aspects. On the one hand, there is the actual treatment of the case, and, on the other hand, the prevention of the spread of contagion. In other words, prophylaxis is here, as in the department of public health, a matter of the first importance; it includes the protection of the patient's other eye in case it be not affected, and the care of the eyes of those in attendance on and those surrounding the patient."

Treating of certain practical points which arise out of our modern bacteriologic knowledge, Dr. Fergus expresses great skepticism as regards the value of caustics in the treatment of acute conjunctivitis. He cites the case of a patient who came under his care for extraction of a cataractous lens. *Staphylococcus aureus* was found in the conjunctiva, and the question came to be how this parasite was to be got rid of. A lotion of 1 to 8,000 mercuric bichlorid was prescribed to be used at home for a period of three weeks. At the end of this time the patient returned with the parasite as abundant as ever. He was then put to bed and the eyes fomented with mercuric bichlorid, 1 to 8,000, for a period of ten days; at the end of this time the parasite was still found in considerable quantities. Nitrate silver was next used, with the result that at the end of a week the conjunctiva had become much inflamed and the parasite was as abundant as ever. Finally, as a last resource, the patient was visited twice or thrice daily and the

whole conjunctival sac thoroughly mopped out with sterilized cotton-wool, moistened with a little sterilized water. This line of treatment removed the parasite in a few days and rendered the conjunctiva safe for operative purposes.

Dr. Fergus emphasizes a point which is already well recognized, namely, that there is no substance which we can supply to the conjunctiva in a strength sufficient to be germicidal without destroying the membrane itself. Germicidal solutions in the lacrymal sac may be of some service, but eye-drops applied to the conjunctiva are in contact with that membrane for so short a time that Dr. Fergus doubts whether lotions or drops have any influence on the development of the micro-organisms in the conjunctival sac. The writer of the article favors extirpation of the lacrymal sac previous to cataract operations, and thinks this operation might be rendered still easier by previously filling the sac either with a paraffin or soft wax. He believes that bandages are often productive of harm, because they retain secretions and consequently simply foment the organ with its own septic discharge, and he employs them only to prevent an ulcer from becoming ectatic. As a substitute London smoked-glasses are used, because these exclude both the actinic and chemical rays of the spectrum.

Finally, says Dr. Fergus, "The practice of fomenting eyes should be discarded; presumably nothing more aids the development of micro-organisms than a moist heat, and I have seen corneal ulcers made very much worse by the application of fomentations. So far as my own practice is concerned, I employ them only for two purposes; one of them is to promote suppuration in the early stages of panophthalmitis, and the other to relieve the pain of rheumatic iritis."

TRANSITORY AMAUROSIS FROM NOSE BLOWING.

At a recent meeting of the Düsseldorfer Verein (*Deutsche Med. Woch.*, 10, 1905, Vereinsbeilage), Asmus reported one of the rather rare cases of one-sided amaurosis following an energetic blowing of the nose. His patient was a man of 56 years, who, after blowing his nose rather violently—there was blood on the handkerchief—became entirely blind in the right eye. The examination (apparently made on the same day) revealed nothing objectively wrong with the eye, except an entire absence of the direct light-pupil reflex. The indirect reflex was prompt and the fundus normal. V.=O. While the doctor was examining the patient's urine, the light-sense began to return to the eye, and after two or

three days the vision was normal, light-reflex normal, but patient still complained of some pain extending from the right orbit to the occiput. Inasmuch as during the continuance of the amaurosis the field of the other eye was entirely normal, Asmus concluded that the trouble was probably due to some compression of the optic nerve by a hemorrhage. To the reviewer it seems more probable that the cause was emphysema of the optic canal, due to some defect of the wall separating it from the sphenoidal sinus, or, more likely still, from the posterior ethmoid cell. This cell, as is well shown in an illustration in the American Text-book, p. 454, may stand in much closer relation to the optic canal than does the sphenoidal sinus; moreover, it may have a much wider communication with the nose.—H. G.

OXFORD UNIVERSITY, under the stimulus of Dr. Osler's appointment as Regius Professor of Medicine, has decided to give a post-graduate course in ophthalmology. The course has been arranged by Mr. R. W. Doyne, the reader in ophthalmology, and special lectures and demonstrations are to be given by Messrs. E. Nettleship, R. M. Gunn, W. H. H. Spicer, E. T. Collins, W. A. Frost, Priestley Smith, E. E. Maddox and S. Stephenson. Mr. Doyne's address is Magdalen St., Oxford, England.

THE FIRST HOSPITAL FOR EYE AFFECTIONS IN PARIS.—Baron Adolphe de Rothschild has built and equipped the first ophthalmic hospital in Paris. It is said to be a model in every respect. The stone building is an imitation of an old Norman chateau, and is said to be one of the architectural ornaments of the city. Two hundred patients were admitted the first day.

THE Hungarian Ophthalmological Society will meet in Budapest on the 11th and 12th of June, in the University Eye Hospital. A discussion upon the pathology and treatment of trachoma and one upon the operation of secondary cataract will take place during the meeting.

THE annual meeting of the Société Française d'Ophthalmologie was held in Paris during the first week in May. Dr. Bourgeois of Rheims opened a discussion upon the total correction of myopia.

At the last meeting of the Board of Directors of the Chicago Eye, Ear, Nose and Throat College, C. G. Dwight, M.D., was elected to professorship of otology, rhinology and laryngology.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting March 21, 1905.

Dr. G. E. de Schweinitz, Chairman, presiding.

INFLAMMATION OF THE FRONTAL SINUS.

Dr. William M. Sweet exhibited a case of purulent inflammation of the frontal sinus, simulating disease of the lacrymal sac. An ivory exostosis, measuring 41×25 mm. had been removed from the inner orbital wall nine years before by Dr. Wm. F. Norris, the tumor involving the plate of the ethmoid bone in its entire extent and also invading the lacrymal bone. Epiphora and a slight discharge of pus at the inner canthus continued since that time. Six months ago an acute edema of the eyelids and face of the right side occurred, and subsided after evacuation of an abscess over the lacrymal sac. Examination a month ago showed a purulent discharge from an opening below the internal commissure, increased by pressure over the sac. Failing to relieve the purulent condition by irrigation and dilatation, an incision was made over the lacrymal sac, and a large probe passed upward in the direction of the ethmoid was followed by evacuation of several ounces of pus. The parts were curetted, irrigated, and a drainage tube inserted. The direction of the drainage tube was upward and slightly backward, and it was believed that the source of the infection was in the anterior cells of the ethmoid, but a radiograph made of a piece of fuse wire in the lumen of the tube showed that the tube, after passing slightly backward for a distance of about one and a half inches, curved forward and entered the frontal sinus. The case was of interest as showing the value of the Röntgen rays in tracing the source of the purulent infection in instances of sinus disease.

Discussion.—Dr. Risley inquired whether it was not probable that in operating for the exostosis the ethmoid or frontal sinus may have been opened and infected. It is his custom to make a free opening in this class of cases and always to drain through the nose.

UNUSUAL CHANGES IN REFRACTION.

Dr. S. D. Risley read this paper and presented briefly the history of two patients in whom marked change in the refraction of the eyes had been observed.

In Case 1, in 1893, he had prescribed, after prolonged mydriasis, for right eye $+ 2.50 \text{ C. ax. } 105^\circ$; left eye $+ 2.50 \text{ C. ax. } 65^\circ$; $V. = 6/6$ in each. These glasses had been worn constantly until June, 1902, when complaint was made of blurred vision, and careful study of the static refraction gave for O. D. $+ 3.50$, $V. = 6/11\frac{1}{2}$, O. S. $+ 75^\circ$ $V. = 6/15$. Macular disease was observed in both eyes and gray posterior capsule in left, but no demonstrable swelling of the lens. In November, 1902, there was no change in refraction of right eye, but in the left $M. = 1.50 \text{ D.}$, which in June, 1903, had increased to -5 D. , making a total increase of 1.50 D. No further change has occurred to present date and no notable change in condition of lens. There was fluid vitreous, floating opacities and progressive increase in the macular choroiditis.

In Case 2 severe asthenopia had been completely relieved by the following glasses, from 1895 until 1902: O. D. $+ 1.50 \text{ C. ax. } 60^\circ$, $V. = 6/6$; O. S. $+ 2 \text{ C. ax. } 105^\circ$, $V. = 6/6$. The glasses were prescribed after repeated examination under a strong mydriatic. In 1905 the asthenopia returned with recurring attacks of migraine. A strong mydriatic was again used, resulting in the following correcting glasses: O. D. $+ 2.75 \text{ C. ax. } 30^\circ$; O. S. $+ 3.25 \text{ C. ax. } 105^\circ$. There was also a left hyperphoria of 2° . Dr. Risley could find no sufficient explanation in second case, except that many days' use of a strong cycloplegia had not in the first examination been sufficient to cause complete relaxation of the accommodation.

Discussion.—Dr. Carpenter referred briefly to those cases in which considerable change was noted in glycosuria, in the formation of cataract, and in iritis. In his opinion, cases like the last of Dr. Risley's could only be explained by assuming that complete paralysis of accommodation was not obtained at the first examination.

Dr. de Schweinitz thought that the first case which Dr. Risley had reported was best explained by an increase of refraction due to changes in and around the nucleus of the lens, because it was well known that even when such alterations were not very visible they none the less occurred. He thought that the point could very positively be determined by an examination with the retinoscope

of the refractive condition of the center and of the periphery of the lens.

The second case appeared to him to be explained, as Dr. Risley himself had suggested, by the fact that at the primary examination full paralysis of accommodation had not been obtained. He also referred to the possibility that alterations in refraction might have had some connection with changes in the body-weight of the patient, or, in other words, with alterations in his nutrition.

Dr. Pyle spoke of the changes in refraction incident to alteration in body-weight. He called attention to the fact that, in the cases of increasing myopia associated with glycosuria, with the subsidence of the systemic affection, there may be a return to the former refractive condition.

EPIPHORA UNASSOCIATED WITH LACRYMAL OBSTRUCTION.

Dr. John T. Carpenter presented this paper. After calling attention to the fact that in obstructive epiphora the secretion rapidly becomes catarrhal or purulent—an important diagnostic point—the present views as to the origin of the secretory fibers for the lacrymal gland were discussed. Epiphora from oversecretion might be due to: (1) Psychic causes; (2) reflex; (3) from stimulation of the secretory center. The cases presenting non-obstructive epiphora were grouped as follows: 1. Epiphora in refractive and muscular anomalies. 2. Reflex epiphora. 3. Epiphora in nervous affections. 4. Idiopathic epiphora. The epiphora of refractive errors is most marked in on-coming presbyopia and hyperphoria and disappears on correction of the refractive error or muscular anomaly. Reflex epiphora is found in intranasal diseases, in ocular inflammatory affections and occurs in nervous and hysterical patients, excited by exposure to smoke or cold or other trifling causes. The results of treatment in this class of patients are not satisfactory, but no surgical treatment to the lacrymal apparatus is permissible. Epiphora in nervous patients has been noted in facial palsy, tabes and syringomyelia. The clinical notes of a case were given in which marked epiphora was apparently due to a central irritative lesion of specific nature. The mechanism of epiphora in facial palsy and tabes was believed to be in some instances due to hypersecretion analogous to the other vasomotor neuroses seen in this disease. The full clinical notes of a case of Basedow's disease were given, in which *early epiphora* and tachycardia were the only symptoms; and the diagnosis was made by examination of the eyes, though in five months' time all of the classic symptoms of exophthalmic goiter have disappeared. The author believes with

Berger that the epiphora in this case was due to hypersecretion of central origin.

Discussion.—Dr. Risley referred to a case of Bell's palsy occurring in a patient, aged 4 years, upon whom at the age of 28 he had operated for the relief of the epiphora and the widened palpebral fissure. The operation consisted of approximating the lid margins at the outer angle, after denuding the edges, and in suturing them in such a way as to shorten slightly the lower lid. This brought the lacrimal punctum in apposition with the eyeball.

Dr. de Schweinitz indorsed Dr. Carpenter's conclusions in regard to epiphora, and agreed with him that the necessity was great for investigating the factors which might be potent in its production from all standpoints before submitting canaliculi and ducts to unnecessary surgical interference. He referred to the frequency with which not only early presbyopia, but early presbyopia associated with cataract formation in its incipency, was connected with epiphora, and thought this might indicate disturbances of the uveal tract, which in their turn, as Dr. Risley had so often insisted, were important from the etiological standpoint in the development of lenticular changes.

METASTATIC OPHTHALMITIS.

Dr. G. E. de Schweinitz read a paper concerning metastatic ophthalmitis, and reported the following case which developed thirty-one days after confinement: A woman, aged 39 years, a multipara, twelve days after normal labor and without preceding indications of any kind, had a sudden violent uterine hemorrhage. For the following eight days no complications appeared, but on the ninth day sudden severe pain began in the left gluteal region, which later extended along the sciatic nerve of the same side, and involved also the hips, knees, shoulders and wrists. These phenomena were accompanied by fever and headache, but an initial chill was not noted. Amelioration of these symptoms took place during the following nine days and the patient was seemingly making a satisfactory convalescence when the pain in and around the right eye developed. Vision was greatly blurred but not lost, and examination by the attending physician revealed grayish deposits on the iris and the capsule of the lens, with haziness of the cornea. Ophthalmoscopic examination was not attempted. This ocular complication appeared thirty-one days after confinement and ten days after the joint involvement. It grew worse rapidly and in four days the appearances were those of panophthalmitis. On the twelfth day the sclera ruptured and the patient was ad-

mitted to the wards of the University Hospital, where the eyeball was enucleated.

Examination of this patient failed to reveal the presence of cardiac or pulmonary lesions. There was no anemia, but a slight leucocytosis. Albumin was present in the urine, but no casts, and examination of the pelvic region by Dr. John G. Clark failed to give evidence of any residual puerperal infection, the pelvic floor being intact, the uterus normal and freely movable, and no apparent disease of the ovaries or tubes. There were no changes in the joints discoverable, and the temperature did not rise above 99.5° F. Bacteriological examination of the purulent material in the interior of the globe showed the presence of staphylococci and numerous chains of streptococci.

Microscopically the conditions were those ordinarily seen in extensive panophthalmitis, namely, elaborate purulent infiltration of the choroid, entire destruction of the retina, rich infiltration of the iris and ciliary bodies with mononuclear cells, and detachment of these bodies from the sclera, the cyst-like spaces thus left being filled with an albuminous exudate. The entire vitreous was converted into a purulent mass, the cells being polymorphonuclear and in a high state of degeneration. The sclera was also richly infiltrated, and in properly stained sections chains of streptococci were visible.

Dr. de Schweinitz, following Axenfeld's classification, described purulent metastatic ophthalmitis as it results from: (a) Puerperal pyemia; (b) surgical pyemia; (c) cryptogenetic septicopyemia; and (d) infectious diseases. In some respects the clinical features of the case which he recorded might be made to accord with any one of the first three of these groups, but he was inclined to think, on the whole, that it should be classified with the puerperal cases, and he pointed out that, although pelvic examination had failed to reveal any residual puerperal infection, such infection was not excluded by this type of examination, because it was well known that there might be a small nidus in the uterine wall or mucous membrane from which the septic emboli could have proceeded, and that this would not give evidence of its presence on digital examination. The paper concluded with a review of the pathogenesis of metastatic ophthalmitis.

Discussion.—Dr. Pyle referred to a study of the literature relative to puerperal metastatic panophthalmitis made by him in 1901, which seemed to show that the affection generally appears between the fifth and fifteenth days after delivery, depending largely upon whether the metastasis follows infection through the lymphatics

and blood-vessels near fresh wounds in the parturient tract, or through the open uterine sinuses, going directly into the circulation. Bilateral cases are almost invariably fatal, and it is quite likely that many such cases escape notice in the presence of bacterial thrombi in the internal viscera or brain, causing profound constitutional symptoms and speedy death. The desiderata in the microscopic study of these cases are:

1. To locate, if possible, the initial ocular lesion (generally in the retina). 2. To demonstrate septic emboli in the choroidal or retinal blood-vessels. 3. To demonstrate the existence of micro-organisms in the eye. The general disorganization of the intra-ocular contents at the time of enucleation often prevents a satisfactory examination. Dr. Pyle referred to a case of monolateral metastatic panophthalmitis in a woman, aged 27 years, which occurred on the tenth day. A remarkable feature was the rupture of the sclera in the posterior segment, leaving a shrunken globe with the anterior segment, on first inspection, apparently unchanged. Such ruptures usually occur at or near the sclerocorneal junction.

Dr. de Schweinitz, concluding the discussion, stated that while it was true, as Dr. Pyle had said, that most of the cases of purulent metastatic ophthalmitis appeared within the first fifteen days, there were instances on record, as was evident from an examination of Axenfeld's tables, in which the ocular complications have been delayed as late as the seventh week. In surgical pyemia the disease might appear as early as the first and as late as the forty-fifth day. While bilateral purulent metastatic ophthalmitis was nearly always fatal, it was not invariably so, and several cases were on record in which recovery had occurred under these circumstances. Usually the eyeballs from cases of ophthalmitis came to examination at a time when it was not possible to determine the region first affected. Ophthalmoscopically emboli had been seen in the retinal vessels. Usually, if not always, in the bilateral cases, the narrowed capillaries of the retina first received these septic masses, but in the unilateral cases the uveal tract was the position at times of their primary lodgement. These facts were in accordance with the investigations of Axenfeld.

NITRIC ACID BURN OF EYEBALL.

Dr. C. A. Veasey reported a case of nitric acid burn involving the whole external portion of the eyeball in which the extensive employment of epithelial mucous grafts materially assisted in the recovery of usual vision. The patient, a chemist, had the misfor-

tune to break a test-tube containing boiling nitric acid, the latter splashing in his face and affecting particularly his right eye. The condition received immediate attention at a hospital in the neighborhood and when examined, one and one-half hours later, there were found numerous burns on the cheeks, nose, eyelids and lips; and the whole ocular and palpebral conjunctiva of the right eye, with the exception of a small portion of the ocular conjunctiva $\frac{1}{2}$ cm. in diameter up and out from the cornea, were so badly burned that the appearance was bluish white as if strong adrenalin had been employed. All visible vascularization had been destroyed. A piece of the broken glass had also made a wound one-quarter inch in length in the semilunar fold. The cornea was steamy, as if rubbed with grease, and through a loup presented numerous long lines, probably scratches. Vision equaled L. P. The conjunctiva of the left eye was very red, probably caused by the fumes of the acid. Cold compresses, atropin, petrolatum and a light bandage were employed at first and as soon as the sloughing conjunctiva began to separate from the eyeball and lids hot compresses were substituted. One week after the accident, the outer fourth of the cornea was comparatively clear and sensitive, the remaining three-fourths hazy and anesthetic, the corresponding portion of the conjunctiva still blanched. Epithelial mucous grafts from the lower lip were now successfully employed to cover the denuded conjunctiva and became thoroughly incorporated, with the exception of a small portion in the extreme upper and lower culs-de-sac. At a subsequent date a pseudo-ptyerygium was excised and the site covered with mucous grafts. Three months after the accident, with a correcting cylindrical lens, vision equaled 6/9, and there remained a small symblepharon above and another below, only observable upon everting the lids. The larger portion of the cornea remained hazy and anesthetic for five weeks; one week after beginning the administration of full doses of thyroid extract it had become much clearer and sensibility had returned. Whether this was simply a coincidence the author can not say, but since the same observation had been made by him in a case of neuro-paralytic keratitis reported before the American Ophthalmological Society, in 1900, he considers the remedy at least worthy of trial in cases of greatly impaired corneal nutrition.

Discussion.—Dr. Risley referred to a burned eye that he had seen, following an explosion of a cannon cracker, which presented the bluish-white appearance described by Dr. Veasey, with the exception of numerous powder grains in the eschar. The latter were readily separated from the eyeball with forceps and the patient

made a rapid recovery. Subsequently, however, he became myopic, though he had been previously hyperopic, and he inquired as to the state of refraction before and after the accident in the case reported by Dr. Veasey. Dr. Risley also referred to a bad burn produced in one of his patients by the use of hydrochloric acid by mistake, instead of an ordinary eye lotion.

Dr. de Schweinitz thought Dr. Veasey's observations on the effect of thyroid extract in his patient and its influence, or apparent influence, on the clearing of the cornea of great interest. He had himself, when called in consultation by Dr. Veasey in the case already referred to, suggested the trial of this remedy, but whether the good result in that particular instance had been a coincidence or a result of the drug he could not say. He had not seen any other case in which it had been tried, but thought it worthy of further investigation. He had himself often employed the remedy at the suggestion of one of his medical colleagues in early and beginning lenticular opacities, and had never noted the slightest beneficial result.

Dr. Veasey stated, in conclusion, that he had never examined his patient's eye prior to the accident, but the subsequent refraction was, for the burned eye, $+ S. 2 D \text{ } \subset + C. 3 D. \text{ ax. } 90^\circ$, and for the other eye $+ S. 12 D. \text{ } \subset + C. .37 D. \text{ ax. } 120^\circ$, showing no myopia at this time. With subsequent contraction the axis of the cylinder was altered slightly, but the strength remained unchanged. Dr. Veasey also referred briefly to a burn he had recently observed when a patient had used spirits of turpentine in an eye cup in mistake for a boric acid solution. Beyond a slight conjunctivitis, lasting three days, no harm was done.

C. A. VEASEY, M.D., Clerk of Section.

Meeting April 18, 1905.

Dr. G. E. de Schweinitz, Chairman, presiding.

DERMOID TUMOR OF THE BULBAR CONJUNCTIVA.

Dr. S. D. Risley exhibited a case of small dermoid tumor of the left eye, situated near the fornix in the region of the ducts of the lacrymal gland. It was brought into view only by rotating the ball strongly downward and inward and holding the eyelid upward and outward. Several small, very fine hairs were growing from its more prominent part and could be seen only in strong light or with a magnifying glass. He proposed to excise the growth. The only subjective symptom was the constant sensation

as from a foreign body under the lid produced by the projecting hairs.

Dr. S. D. Risley also exhibited a patient, male, aged 22 years, from whose left eye the transparent lens had been removed for high myopia. Fourteen years before the parents had been told that the child had atrophy of the optic nerves. Inspection revealed two very prominent eyes, suggesting exophthalmos. There was a large, atrophic posterior staphyloma surrounding both optic discs, but no apparent atrophy of nerves, and the fields of vision were normal. M.=34. D. in each, and with correction V.=5/60 uncertainly. The ophthalmometer showed very slight corneal astigmatism. A cautious dissection of the capsule was made and later repeated with some laceration of the lens cortex. This was followed by swelling of the lens substance and the emergence of cloud-like masses into the anterior chamber. After a week there was slight ciliary injection and some increased tension. The softened cortex was then evacuated by means of a keratome incision of the cornea, leaving only the grayish lens capsule and small masses of gray cortex entangled in its meshes. There was no reaction or pain. A week later a central opening in the membrane was made with a knife needle, leaving a clear back central pupil. A week after the needle operation with — S. 9. D. \ominus — C. 1.00 D. ax. 90°, V. = 6/30 +.

Discussion.—Dr. de Schweinitz, referring to Dr. Risley's first case, thought it represented the so-called lipomatous dermoid of the conjunctiva, which is most frequently found between the superior and external rectus muscles, and which, on section, after removal, shows the structure of the skin and of fatty tissue, and hence its name. He had removed a number of these growths, and referred to a paper which he had written on the subject for the Pathological Society.

Dr. Wendell Reber (by invitation) exhibited a patient from whose eye the transparent lens had been removed for high myopia. The patient, aged 40 years, had worn glasses from her eleventh year. In spite of careful refraction and general treatment M. increased. Vision six months ago, R.=1/120, L.=1/120; with glasses: R. — S. 26.00, D. = 5/60, L. — S. 24.00 D. = 5/30. The ophthalmometer showed astigmatism of 1.00 D. with the rule in O. D., and 1.75 D. with the rule in O. S. The radii of curvature of the cornea were R. 8 mm., L. 8.10 mm. There were marked lenticular and vitreous opacities in the right eye, and a large posterior staphyloma and three large atrophic areas on the temporal side. In the left eye there was some slight vitreous haze.

but not nearly so much fundus involvement. Notwithstanding careful treatment, vision with the best glass she could be given (-24.00 D.) = $5/60$. After consultation, Dr. H. F. Hansell did dissection on the left eye, opening the capsule moderately. A week later freer incision into the capsule was made, inducing considerable reaction by the tenth day, when a suction operation was done. Rather a frank iritis followed, but after four weeks the eye quieted down, and to-day (five months after operation) her vision, with a 4.00 D. Cyl. Axis 90° , equals $5/15+$. The right eye, because of the more extensive changes, was not operated on.

Dr. Edward A. Shumway exhibited a case which showed a scar in the cornea and a radial tear in the iris, as the result of a perforating injury by the point of a fork eight years before. The lens was perfectly clear and the eye had a myopia of about 3 D. He thought that it represented a case in which a traumatic lenticular opacity had subsequently cleared, as it would seem impossible for a sharp instrument to penetrate the iris, without injuring the lens.

SUBDIVISIONS OF THE VISUAL CORTIX, WITH REMARKS ON CORTICAL COLOR CENTERS.

Dr. Charles K. Mills read this paper, in which he stated that each primary or projection area of the cerebral cortex has its anatomic skirting and functionally correlated region of higher development. To Munk, Flechsig, Wilbrand, Campbell, Mott, and others we are especially indebted for our knowledge of these related physiologic zones. The primary center for vision is that for the recognition of light, or of the difference between lightness and darkness; all other cerebral visual centers are the results of evolution. The limits of the primary cortical visual center are the cuneus and the calcarine fissure. Form recognition has developed dorsally toward and over the mesal edge of the hemisphere, expanding into the higher visual area, which is much subdivided into subareas and centers as into those for language symbols, geometric forms, designs, persons, places, and natural objects. It is necessary to recognize a separate area for macular or clear vision, both in the primary and in the higher cortical visual area; the first is probably situated at the anterior extremity of the calcarine fissure, the second in or near the angular gyre.

Separate cortical centers exist for fundamental colors, these having developed ventrally. In all the cases of achromatopsia in which cortical lesions were present, as those of Brill, Verrey, Dejerine, and Henschen, the cortex of the lingual or fusiform lobule

ventrad of the calcarine fissure was involved in the lesion. The stratification view of Wilbrand is not tenable. Cerebral development takes place by cortical expansion, not by the superimposition of strata and layers. The almost innumerable shades and tones of color capable of being appreciated by the human eye are to be explained by processes of association. The view that varying degrees of interference with conduction in the fibers of the visual pathway causes varying degrees of color blindness and of light recognition can not be maintained. Extreme differentiation is the rule: of photochemical substances for the fundamental colors; of nerve-end organs in the retina; of fibers or fibrils in the optic tract and optic radiations; of basal centers in the pregeniculum, and of cortical centers in the occipital lobe.

Discussion.—Dr. Spiller said he believed the cortical visual area is formed by the cuneus, lingual, and fusiform lobules, and occipital point: of which the calcarine cortex is the most important. It is difficult to determine whether the macular region is represented in the anterior or posterior part of the calcarine cortex, or in the whole of this cortex, and it is possible that each macula is represented in the calcarine cortex of both cerebral hemispheres. The case recently reported by Beevor and Collier (*Brain*, 1904), in which the calcarine cortex was destroyed, and yet the lower quadrants of the visual fields were preserved, shows that the visual area can not be confined to the calcarine cortex. Dr. Spiller also said he was not prepared to accept the view that the posterior portions of the second and third temporal convolutions are part of the visual area. It may be that the recognition of form, persons, etc., is dependent on the integrity of separate areas, although the evidence of this is not thoroughly convincing. The investigations of Hinshelwood lend some support to the view. This investigator was led to believe that the letter and word visual images of each language a person has acquired are arranged separately within the center for word-seeing.

CONJUNCTIVAL IRRITATION, EXCITED BY PROXIMITY TO A HORSE.

Dr. Wm. Campbell Posey read this paper. He reported three cases in which irritation of the conjunctival and nasal mucous membrane was excited by the subjects coming in contact with a horse, or even going into a stable. One of the patients was a sufferer from hay fever. Irritation by dust in driving could be eliminated, as similar symptoms were excited in sleighing, and the patients were subject to no annoyance while automobiling. Dr. Posey recounted an observation which had been made in London, where

the appearance of the symptoms was delayed for an hour by having a subject with this idiosyncrasy drive behind a horse which had been covered with vaselin. He said, further, that some individuals were susceptible to emanations from other animals, such as cats and elephants, and referred to an interview which he had had with Dr. S. Weir Mitchell, who had told him that he had seen marked cases of conjunctivitis set up by the presence of cats. The conjunctivitis, in the cases seen by Dr. Posey, took the form of swelling and injection of the conjunctiva, with a hypertrophy of the follicles, attended with a slight mucoid discharge. He concluded that the irritation of the conjunctiva in these cases could be attributed only to a peculiar individual susceptibility to the emanations from certain animals.

Discussion.—Dr. Pyle stated that in his work on "Anomalies and Curiosities of Medicine" he had made mention of similar instances which he had found in the literature of personal idiosyncrasy to the emanations from various animals.

Dr. de Schweinitz stated that he had one patient who always acquired a sharp conjunctivitis, more marked in one eye, if she went into the stable, but he had never known this patient to have a conjunctivitis from simply riding behind horses. He also had a patient with a remarkable idiosyncrasy toward cats. If, for example, she stroked a cat, she would in a very short time be seized with a sharp conjunctivitis, which manifested itself as follows: For a few minutes there were smarting, burning, and hyperemia, followed by an intense chemosis, so great that the bulbar conjunctiva would protrude between the lids. This gradually subsided and the condition improved in a few hours. The attack might be sharp or slight, according to the length of time of stroking the cat. If he were to compare the appearances with any others that were well known, he would say that they resembled an exaggerated dionin reaction, and thought it certainly must be explained by assuming an acute angioneurotic edema of the conjunctiva. Dr. de Schweinitz also referred to some experiments that had been made in order to determine what was the cause of the various conjunctival diseases which were caused by hairs, and made some reference to the chemical constituents which had been supposed to cause the conjunctivitis produced by the hairs of caterpillars and certain plants. He thought, however, that in the present instance these did not apply, as Dr. Posey's cases seem to have occurred without any local irritation by getting hairs into their conjunctival culs-de-sac.

Dr. Posey, in conclusion, said that the literature contained many references to irritation of the mucous membrane of the respiratory

passages by the emanations from animals, and that, although in this class of cases it was thought to be due to an irritation of the olfactory nerves, it was impossible to state the precise nature of the exciting agent.

MIKULICZ'S DISEASE.

Dr. S. Lewis Ziegler presented a case of Mikulicz's disease showing bilateral lymphomata of the lacrymal, parotid, and submaxillary glands, due to tonsillar hypertrophy, and consequent suboxidation. The enlarged glands were symmetrical, pale, and painless. The patient was a colored girl, somewhat anemic, a confirmed mouth breather from greatly enlarged tonsils, and suffered from constant colds. He believed the etiology was suboxidation with subcatabolism. Excision of both tonsils, without any medication, brought complete resolution of the lymphomata extending over a period of about two months, the submaxillary glands yielding first, followed by shrinkage of the lacrymals and lastly of the parotids. The circulation, body heat, and health showed equal improvement.

Discussion.—Dr. Posey said that when the intimate relationship which exists between the lymphatics of the eye and the glands in the neighborhood of that organ is considered, it is not remarkable that involvement of the lacrymal should be attended simultaneously with pathologic changes in the parotid, submaxillary, and cervical glands, and in this connection he wished to report that the case of Parinaud's conjunctivitis and inflammation of the conjunctiva, which was associated with marked changes in the glandular system of the head and neck, reported by Dr. Thomson at an earlier meeting of the Section, showed marked improvement in the ocular condition, though there was still some swelling in the preauricular and cervical glands.

He also referred to a negro girl that he had exhibited before the Section some years ago with bilateral hypertrophy of the lacrymal glands, but without similar involvement of other glands of the body. The swelling of the lacrymal glands in this case subsided without special treatment in about 18 months' time.

SOME LESIONS OF HIGH MYOPIA. CLINICALLY CONSIDERED.

Dr. H. F. Hansell read this paper, in which he referred to the usual changes in the posterior portion of the eyeball resulting from increasing axial myopia and spoke particularly of the three symptoms which have their origin in the thinning of the choroid and stretching of the retina in the neighborhood of the fovea, namely, slow vision, the demand for abundant illumination and the early

exhaustion of the seeing power. He believed that the causes of progressing myopia are hereditary tendency to scleral distension, congenitally enlarged eyeball, excessive convergence, compression of the eyeball between the straight muscles and imperfectly corrected myopia and associated astigmatism, most of which causes are active in increasing the intraocular pressure in the posterior part of the eye. He did not believe that accommodation was a factor in the increase of myopia after the myopia had reached the degree of 8 D., excepting in those cases in which ciliary muscle contraction was forced by the constant wearing of full correction and that the attempt to re-establish functional relations between accommodation and convergence would result in failure.

Discussion.—Dr. Harlan believed that the chief factor in the production of excessive myopia is some disturbance of the relation of accommodation and convergence and that the proper relation should be established, if possible, by full correction.

Dr. de Schweinitz did not agree with Dr. Hansell in his recommendations in regard to the treatment of myopia with glasses. His personal experience entirely justified the assertion that full correction is the object to be attained for young myopes with normal visual acuity and binocular near vision, no matter how high their myopia, provided the lens selected shall not be an overcorrection when brought close to the eye. He believed that each case must be studied on its own merits, and there were exceptions to the rule just recited, for example, when visual acuity was very imperfect or binocular vision was lost; but all statistics at the present time, which had been carefully considered, indicated the great value of what is known as full correction in the prevention of the increase of myopia.

Dr. Pyle spoke of a case of high myopia in a man of literary habits, aged 34 years, who wore with comfort a full correction of 11 D. Visual acuity was nearly normal, and there were no ophthalmoscopic evidences of the choroidal and retinal changes commonly associated with high myopia, suggesting that the defect was not axial

C. A. VEASEY, M.D., Clerk of Section.

THE COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting in Denver, Feb. 18, 1905.

The scientific meeting was held in the office of Dr. George F. Libby, Dr. Libby presiding.

EXUBERANT GRANULATIONS IN TRACHOMA.

Dr. Bane: This lad, age 8, has had disease of the eyes since he

was 2 years old. Vision with the right eye = 6/18 and the left 6/24. He has moderate ptosis and some increase of lachrymation. Exposure of the palpebral conjunctiva reveals enormous trachomatous bodies on the lids and in a fold extending onto the surface of the eyeballs. The eyes are about alike in appearance. The corneae are clear. There was a history of mouth breathing, and on examination a mass of adenoids was found. The adenoids were removed, greatly to the relief of the patient.

Discussion.—Dr. Black remarked that we do not see many such cases in Colorado as the one shown. He would recommend operation.

CORNEAL ULCER.

Dr. Bane presented this case: Mrs. E. F., age 52, came under my care three weeks ago. She gave a history of inflammation of the right eye lasting two weeks. Vision: With right eye named finger at 60 cm., left eye 6/20. There was photophobia, lachrymation and supraorbital pain. Moderate circumcorneal congestion. A deep crescentic ulcer in lower outer quadrant of the right cornea. The treatment consisted of cleansing ulcer with carbolic acid, hot fomentations and tonics. After a few days, hypopyon was noticed. Ulcer was again cleansed with pure carbolic acid. A few drops of 50 per cent. solution of keimol was ordered to be dropped into the eye three times daily. Two days later the ulcer was healing and the hypopyon had disappeared. At the present time you will observe a deep recess in the cornea, yet clean, and the eyeball is free from congestion.

Discussion.—Dr. Black stated that he had been using keimol and considered it an excellent antiseptic.

Dr. Bane stated that he had used keimol in three cases of serpent ulcer, two with hypopyon, and all apparently recovered more rapidly than under the use of any other local remedy. The claim is made that keimol in full strength will kill streptococci in one minute.

RECURRING PAINFUL EROSION OF THE CORNEA.

Dr. Jackson presented a case of this condition in a physician who, two years and a half before, had suffered from a finger-nail abrasion of the cornea. Since that time the attacks had averaged as often as once in ten days; although during the last 4 months they had become less frequent, and none had occurred for over a month. The attack always occurred on awakening; usually in the early morning, but once or twice when he had slept several hours in the day time. If he could get the eye opened sufficiently to make

a good instillation of cocain, the attack was cut short in a few minutes, the relief being permanent. But the eye remained slightly sore and tender to touch for some days afterwards. At any time a rough touch on the closed lid was painful. The attacks were much more frequent when he was compelled to use the eye for near work in reading or with the microscope.

Discussion.—Dr. Black asked if the patient has any nasal affection. As cocain relieves, he suggested an oil preparation made with the alkaloid of cocain.

Dr. Bane remarked that the peripheral nerves at the seat of the corneal injury were probably entangled in the cicatrix.

Dr. Jackson stated that an Austrian physician has seen some fifty cases similar to the one just exhibited, and that an ointment of the yellow oxid of mercury, applied each night for several months, would effect a cure.

PARALYSIS OF EXTERNAL RECTI AND RETRACTION MOVEMENTS.

Dr. Jackson reported the case of a boy, age 10, who was first noticed to squint when 5 years old. The eyes ordinarily appeared straight, but at times there was a noticeable convergence, even when looking directly ahead. The Maddox rod showed esophoria, 10 to 20 C., but it was difficult to get him to see the streak and point of light when the streak was vertical, although he saw them together with perfect ease when the streak was horizontal. The right eye could not be turned outward beyond the median line; the left could be turned only 5 degrees outward. Movements in other directions were limited but little. On attempting to look to the right, the right eye came to the median line and opened widely. The left eye turned in, the palpebral fissure was narrowed, and the eyeball was retracted 2 mm. or more. On attempting to look to the left, the right eye turned in and was retracted 2 mm. or more. The left came to the median line and opened widely. Although the history was very clear that the defect had not been noticed until 5 years of age, the deformity was not very obtrusive, and it was believed that the condition was probably congenital.

TABES AND EPIPHORA.

Dr. Jackson reported the case of a man, aged 58, who complained of the eyes watering excessively for the last two months. The pupils were large—right 6.5, left 6 mm. in diameter—contracting little, if any, to light, but contracting to $3\frac{1}{2}$ and 3 mm. with convergence. The eyegrounds were normal. Corrected vision was $\frac{4}{3}$ partly. On investigation there was found complete absence of

knee-jerks, inability to stand on one foot, and difficulty in standing on both feet with eyes closed. There was a history of lightning pains in the lower extremities for 27 years, which had been less severe during the last ten years, since which time he had resided in Colorado. There was noticeable dragging of the feet in walking. The patient considered himself in good general health. Organic disease of the nerve centers had not been suspected.

WM. C. BANE, Sec'y.

Meeting in Denver, March 18, 1905.

Dr. D. H. Coover, Chairman, presiding.

FOREIGN BODIES IN BOTH EYES.

Dr. D. H. Coover submitted the following report of a case:

C. L., age 34, miner, on February 27 had both eyes injured by a premature explosion. On examination, found the following condition of right eye: A wound at outer corneal margin, extending 2 mm. into the cornea. The iris was incised at the pupillary margin, the lens was opaque, lens matter in the anterior chamber, pupil irregular, tension minus, vision reduced to light perception, position and projection good. Left eye on the nasal side at the sclera-corneal margin was a small wound, and on the ball over the internal rectus, midway between the cornea and the caruncle, was another wound in the conjunctiva. Pupil was dilated, lens clear, counted fingers at 3 feet. Fundus could not be seen with ophthalmoscope on account of hemorrhage in the vitreous, except on the nasal side immediately back of the lens, corresponding to the wound in conjunctiva, was seen a detachment of the retina, under which was an exudate of blood. There was considerable ciliary injection and tenderness, tension minus. No rock could be seen in either eye with the ophthalmoscope.

Dr. George Stover took a skiagram of both eyes; both showed foreign bodies. The skiagram of the right eye showed foreign body 16 mm. back of center of the cornea, 8 mm. below the horizontal plane, 10 mm. to nasal side of vertical plane, which would bring the foreign body in the sclerotic to the nasal side of the disc. The left eye showed a foreign body 10 mm. back of center of cornea, 7½ mm. below the horizontal plane and 4 mm. to nasal side of vertical plane, which would bring the foreign body in the vitreous. The object of bringing this man before the society was to get expression as to the prognosis of the case and the best procedure to save his vision, if it could be saved in either eye.

Discussion.—The consensus of opinion was to remove the lens from the right eye and await further developments.

INCISION THROUGH THE CORNEA WITH GLASS FROM STEAM GAUGE.

Dr. Hess presented this case: Man, about 30 years of age, who, two hours previously, had sustained a horizontal cut through the left cornea by a piece of hot glass from a steam gauge. The incision included the iris and anterior portion of the lens. There was some blood in the anterior chamber.

Discussion.—Dr. Hilliard thought it important to learn if the eye contained a piece of glass.

Dr. Black remarked that the medicolegal aspect of such cases would be of interest. The water glass tubes are not well protected with wire. Engineers are usually responsible for not having the gauges protected.

Dr. Strader advised protection of the injured eye by a shield, lest by another accident the lens be forced out. The water glasses are so hot that the germs are destroyed.

Dr. Coover had seen about half a dozen such cases, and all did well. He advised that a skiagram be taken.

STEEL REMOVED WITH A MAGNET.

Dr. Coover: About two months ago Dr. Neeper brought a case with a piece of steel in one eye. The magnet was applied, and sometimes it produced pain by traction and again none. A skiagram was made and the foreign body located. After making an incision, the magnet was again applied and withdrew a bit of steel and also a scale of paint that had enough iron rust on it to be attracted by the magnet.

Dr. Neeper: The patient is doing very well, yet some edema remains. The vitreous has a greenish cast, yet is clearing rapidly.

PIECE OF FINE BRASS WIRE IN AN EYE.

Dr. Strader reported a case of an injured eye caused by a particle from a whip lash. On the eighth day the patient came under his care. He discovered an exudate in the vitreous. The inflammation continued and eye was enucleated. Examination of the ball revealed a bit of brass wire 16 mm. long and the thickness of No. 70 thread.

SCLERITIS.

Dr. Bane presented this case: Man, age 38, who had received a slight injury to the left eye the last week in January, 1905, by a small particle of brick striking the eyeball about 3 mm. to the temporal side of the cornea. An oval nodule, 3 mm. in diameter, devel-

oped at seat of injury and at first was very suggestive of phlyctenular conjunctivitis. Gradually other nodules appeared, and now a group of three are present, with some invasion of the adjacent margin of the cornea. Patient has taken freely of pure sodium salicylate without any appreciable benefit. The local treatment has varied, but has consisted mainly of an ointment of salicylic acid and hot fomentations.

Discussion.—Dr. Patterson spoke favorably of the tincture of the chlorid of iron in such cases.

Dr. Neepor recommended dionin for local use in stimulating the lymphatics.

WM. C. BAXE, Sec'y.

THE sixth annual meeting of the American Roentgen Ray Society will be held at Johns Hopkins University, Baltimore, September 28, 29 and 30. Arrangements have been made for an excellent program, and a large attendance is expected. The papers of the meeting for the first day will deal with *x*-ray diagnosis, and those of the second and third days will be therapeutic. There will also be an evening exhibit of lantern slides, which promises to be extremely interesting. The Belvedere Hotel has been selected as headquarters.

VERDICT FOR PHYSICIAN.—In the case of James Scott against Dr. B. Robert White, Strasburg, in which \$1,000 damages was claimed for malpractice in that the defendant was alleged to have neglected to treat the plaintiff for a diseased eye while he was quarantined on account of smallpox, the jury brought in a verdict for the defendant, who contended that he had not been retained by the plaintiff, but had acted only as a health officer.—*Jour. A. M. A.*

FATALITY FROM WOOD ALCOHOL.—One man is dead, another totally blind, and several have been made ill as the result of drinking what is believed to be "moonshine" wood alcohol whisky, which was furnished to the victims who were acting as professional mourners in a Jewish synagogue on the lower east side.—*Jour. A. M. A.*

Notes and News.

PROF. J. HJORT of Christiania is dead, at the age of 70 years.

DR. SACHSALBER has been appointed extraordinary professor of ophthalmology in Gratz.

DR. LABANON has received the appointment as professor of ophthalmology at Tomsk, Russia.

DR. FRANK ALLPORT of Chicago sailed for Europe April 29. He will return the middle of June.

DR. GILBERT B. PFOUTZ, Salt Lake City, has been appointed oculist to the Salt Lake Route.—*Jour. A. M. A.*

DR. C. A. VEASEY has removed his offices to the Professional Building, 1833 Chestnut St., Philadelphia, Pa.

PROF. O. PARISATTI of Rome has brought out a new journal on ophthalmology entitled *Revista Italiana di Ottalmologia*.

PRIESTLEY SMITH, upon the occasion of his retirement from the staff of Queen's Hospital, Birmingham, on January 14, 1905, was given a farewell dinner by his students and friends.

THE well-known ophthalmologist, Dr. Parinaud, died recently at his home in Paris, aged 61 years. He was known chiefly for his work on hysterical affections of the eyes, strabismus and septic conjunctivitis.

PROF. H. SCHMIDT-RIMPLER, Prof. C. Hess and Prof. Emil v. Grosz have been appointed by the Hungarian Prime Minister to judge the twenty prize essays on trachoma, received by that government in competition for the prize of two thousand crowns offered by the Hungarian Minister of the Interior.

ERNEST ABBE, professor of physics at Jena, died January 25, 1905. He was long connected with the Zeiss Institute, and was responsible for the perfected microscope with the immersion and light-condensing apparatus. He was responsible for the binocular corneal microscope.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JUNE, 1905. VOL. XIV. No. 6. NEW SERIES

Original Articles.

ON THE VARIOUS METHODS EMPLOYED FOR LOCALIZ- ING FOREIGN BODIES IN THE EYE BY MEANS OF THE ROENTGEN RAYS.*

JOHN E. WEEKS, M.D.

NEW YORK.

The great value of the x -rays as a means of localizing foreign bodies in the eye is now, I think, conceded by all ophthalmologists.

We have in the ophthalmoscope, the sideroscope and in the magnet means which, under certain conditions, enable the operator to locate foreign bodies in the eye and orbit, but their uses are limited.

The ophthalmoscope may be employed to determine the presence of foreign bodies in the interior of the eye that are visible. These do not comprise more than 10 per cent. of the cases. The ophthalmoscope is the most valuable means when the foreign body can be seen, as the location is accurate and positive and applies to foreign bodies of whatever character.

The sideroscope, if properly constructed and properly mounted, is of value in indicating the presence of a magnetic body in the eye or its vicinity. However, when it is used care must be taken to exclude any other magnetic body from the "field" of the needle of the sideroscope, otherwise the results are unreliable. The impossibility of determining the location of the magnetic body within one to three centimeters and the fact that the method is applicable to magnetic bodies, only detract greatly from the value of the sideroscope as a means of locating foreign bodies in the eye.

The only magnets that are of much diagnostic importance are the powerful magnets—those that are usually termed "giant mag-

* Read before the American Ophthalmological Society, May, 1905.

nets." The diagnosis of a magnetic body in the eyeball or in the tissues in the anterior portion of the orbit or in the lids can be made with the giant magnet ordinarily, provided the magnetic body of suitable size, but if the magnetic body is very minute or is lodged in the posterior segment of the globe, or if it is bound down by adhesions, or is deeply situated in the tissues of the orbit, the magnet often fails as a means of diagnosis. It is, of course, of no value in determining the presence of non-magnetic foreign bodies.

In addition to the limited application of the giant magnet, there is more or less danger attending the diagnosis of magnetic foreign bodies in the eye by the use of this instrument because of injury that may be inflicted by the application of too much force in a direction not the most favorable for the removal of the foreign body. Traumatism to retina, ciliary body, lens, and iris may result which might be avoided if the operator was aware of the exact location of the foreign body.

The *x*-rays are harmless as at present used for locating foreign bodies in the eye and orbit, so far as the patient is concerned, and they are applicable to all foreign bodies that are opaque to the rays. The principal substances (see table) are all the metals (with one exception), the degree of opacity varying with the density of the metal and glass. The *x*-rays are of no value in locating splinters of wood.

TRANSPARENCY OF VARIOUS SUBSTANCES FOR ROENTGEN RAYS.

Material.	Sp. gr.	Trans- par- ency.	Material.	Sp. gr.	Trans- par- ency.
Pinewood	0.55	2.21	Tin	7.28	0.118
Walnut	0.65	1.50	Zinc	7.20	0.116
Paraffin	0.874	1.12	Iron	7.87	0.101
Rubber	0.93	1.10	Nickel	8.67	0.095
Wax	0.97	1.10	Brass	8.70	0.093
Stearine	0.97	0.94	Cadmium	8.69	0.90
Cardboard		0.80	Copper	8.96	0.084
Ebonite	1.14	0.80	Bismuth	9.82	0.075
Woolcloth		0.76	Silver	10.5	0.070
Celluloid		0.76	Lead	11.38	0.055
Whalebone		0.74	Palladium	11.3	0.053
Silk		0.74	Mercury	13.56	0.044
Cotton		0.70	Gold	19.35	0.030
Charcoal		0.63	Platinum	22.07	0.020
Starch		0.60	Ether	0.713	1.57
Sugar	1.61	0.60	Petroleum	0.836	1.28
Bones	1.9	0.55	Alcohol	0.793	1.22
Magnesium	1.74	0.50	Amyl alcohol		1.20
Coke		0.48	Olive oil	0.915	1.12
Glue		0.48	Benzol	0.868	1.00
Sulphur	1.98	0.47	Water	1.00	1.00
Lead ointment		0.40	Hydrochloric acid	1.260	0.86
Aluminium	2.67	0.38	Glycerine	1.240	0.76
Talcum	2.6	0.35	Bisulphide of carbon	1.293	0.74
Glass	2.6	0.34	Nitric acid	1.420	0.70
Chalk	2.7	0.34	Chloroform	1.525	0.60
Antimony	6.7	0.126	Sulphuric acid	1.841	0.50

The above table for the relative transparency of equal thickness of various substances. (water = 1) is due to Batelli and Garbasso.

Skiagraphy.—In the procedure for the localizing of foreign bodies in the eye, we must first have a good skiagram. The requirements for this are as follows:

1. The means for developing a suitable supply of *x*-rays. This implies the possession of either a static electrical machine of sufficient power, or a properly installed induction coil.

2. A suitable source of the *x*-rays. This is obtained by the use of a suitable Crookes tube, of which one of the best is a heavy anode Gundelach tube.

Roentgen rays pass from the anode of the tube in straight lines, and can not be deflected or retracted. Other rays, known as dispersion rays, are developed, which have a tangential direction. They are relatively few in number and may be disregarded. Suit-



Fig. 1.—Mackenzie Davidson's head-rest.

able screens have been devised for the purpose of intercepting these rays and preventing them from interfering with skiagraphy and with fluoroscopy, but ordinarily these screens are not necessary. The line perpendicular to the photographic plate that cuts the center of the anticathode is known as the *anodal axis*.

3. A head-rest that will ensure immobility of the head as far as possible during the period from the beginning of the first to the end of the second exposure. Of the head-rests employed, those which are used with the patient in the recumbent position are probably the best. The head-rests of Mackenzie Davidson (Fig. 1) and of Hulen (Fig. 2), with the patient in the sitting position, permit of greater possibilities of error in adjustment and of subsequent movement than do those of Mackenzie Davidson, of Sweet, and of Dixon (Fig. 3), which require the recumbent position. The

head-rest of Dixon, which is simple and efficient, is certainly one of the best.

4. A plate-holder which will permit the plate to be inserted and removed readily will hold it firmly in proper relation to the head and possesses the proper registration device, is necessary. The apparatus should include the plate-holder in the head-rest. The crossed wires introduced by Mackenzie Davidson supply an excellent registration device.

5. A suitable tube-holder. This condition will be met by a tube-holder that is sufficiently firm, will permit of a satisfactory adjustment of the distance of the tube from the photographic plate and of movements in all directions, particularly vertically and horizontally, with mathematical precision. (Two exposures at equal



Fig. 2.—Hulen's head-rest.

distances from the primary anodal axis are required, either in a vertical or horizontal direction.)

6. The proper relation of the patient's head and eyeball to the plate. It is desirable that the part to be skiagraphed should be in the anodal axis as nearly as possible, as the clearness of the shadow is much greater and the time required for the exposure is less.

Head.—The sagittal plane of the head should be exactly parallel to the plane of the photographic plate, and the horizontal plane of the head, when the head is in the primary position, should coincide with the horizontal wire in the plate-holder (if the patient is in the recumbent position, with the vertical cross wire in the plate-holder). The desirable position can be most readily obtained by means of a straight edge or plumb line held parallel to the surface

of the plate over the sagittal and horizontal planes of the head, and moving the head to conform to the desired position. When the head is in position it should be suitably clamped.

The planes of the eye must correspond with the planes of the head. This may be obtained by requiring the patient to "fix" with the sound eye a small object placed at a distance of about one meter from the eye at a point where the vertical plane of the eye containing the foreign body would cut the horizontal plane of the same eye if both planes were extended. No movement of eye or head can be permitted during the time of making the exposures. Unless the relations of plate, head and eye are exactly as described, error must result.

Localization.—Having obtained the skiagrams from the two exposures, whether on one or on two plates, the problem of determining the location of the foreign body in the tissues must be

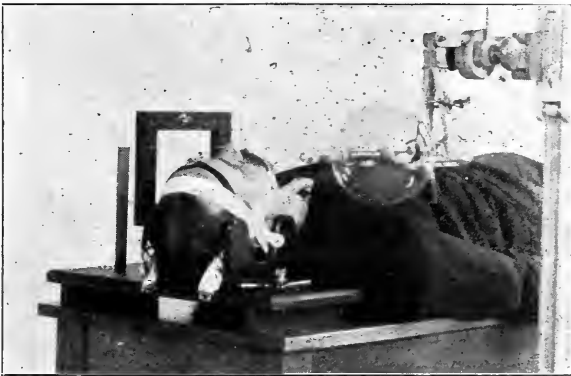


Fig. 3.—Dixon's head-rest.

solved. "All proper methods of localization," as was recognized and employed by Mackenzie Davidson, "depend upon the determination of the three co-ordinates x , y and z (Fig. 4), which fix the position of a given point in space." This is done by triangulation. The location of the foreign body may be compared with the known location of a small object which has been termed a "marker." A "marker" is not necessary in determining the location of a foreign body in tissue, provided the relation of the plate to the tissues at the time of the exposure is known. This may be established by inking the cross wires and leaving their impression on the skin. While this method is sufficiently accurate for tissues of other parts of the body, it is not sufficiently so for the eye and surrounding parts.

Sweet employs two "markers" in the shape of small metal balls,

one of which is placed immediately in front of the center of the cornea. The second is placed 15 millimeters from the first and on the same horizontal plane. The distance of the first ball from the center of the cornea is measured and recorded. Mackenzie Davidson employs one "marker" in the shape of a piece of fuse wire fixed to the lower lid by means of adhesive plaster. The distance of the upper end of this piece of wire below the center of the cornea, anterior to the center of the outer service of the cornea and to the nasal or temporal side of the vertical plane of the eye, is measured and all measurements are recorded. Hulen uses the same kind of a "marker." Dixon uses a small metal ball (Fig. 5), so fixed to a head-band that the ball can be adjusted before the center of the cornea. The distance of the ball from the center of the cornea in the axis of the globe is recorded. All measurements are taken when the eye is in the proper position, as previously described. In

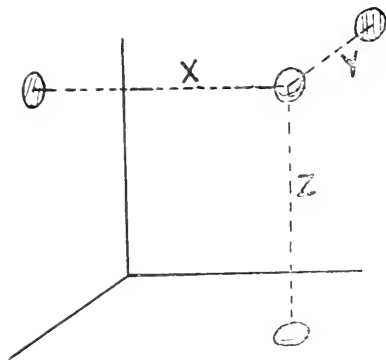


Figure 4.

order to give satisfactory results, the "marker" should not change its position during the time of making the exposures. The "marker" of Mackenzie Davidson is not so good as the others, as movements of the lower lid may cause it to move and produce considerable error.

Other measurements that should be known are the distance of the source of the x -rays, the target of the tube, from the plate and the distance through which the tube is moved in changing from the first to the second position. These measurements have not been employed by Sweet until recently, as they are not actually necessary when two "markers" are used. In order to obtain the coordinates which serve to localize the foreign body, triangulation based on the measurements obtained and on those recorded on the photographic plate is resorted to. Sweet constructs his figure from the known position of the two metal balls in relation to each other, the plate and the eyeball, and the measurements secured from the

shadows of balls and foreign body found on the plates. Since the construction of the figure necessitates the joining of points that are very close to each other (distance between centers of balls 15 mm.), the lines must be drawn with great accuracy to avoid error. Sweet's use of the distance from anode to plate, which he now employs, serves to lessen this possibility in his method. If the distance between the position of the tube when the first exposure is made and when the second exposure is made is known, the necessity of the second (temporal) "marker" is obviated. Sweet's method of triangulation arrives at the same results as those obtained by other methods. It is not so simple, nor are the results more accurate.

Mackenzie Davidson seeks to obtain by means of an apparatus with cross threads the same conditions that were present when the skiagrams were taken, the cross threads representing the course of



Fig. 5.—Dixon's "marker."

the Roentgen rays that impinged on "markers" and foreign body. This apparatus is known as the Mackenzie Davidson cross-thread localizer. It permits of arriving at results that are approximately accurate, but the apparatus is unnecessarily cumbersome, complicated and expensive.

Dr. Vard B. Hulen of San Francisco has simplified the head-rest and has done away with the triangulation apparatus entirely, employing the same principle exactly, but determining the location of the foreign body from the skiagrams by portraying the intersection of the rays at the sites of "marker" and foreign body graphically. The expense of the apparatus is greatly reduced and the accuracy of the method perhaps slightly improved upon.

The figure as constructed by Hulen is easy to understand and is accurate. I quote from his article: "On a piece of drawing paper make two vertical lines (Fig. 6), the distance between them being

that recorded for the distance between the anode and cross wires. Cross each of these lines near the bottom by a horizontal line, and mark the point of crossing of left line '1.' Then mark a point '2' on this left vertical line, the same distance above as the tube was displaced vertically when taking the second picture. Then in Photograph 1 measure the vertical distance from the shadow of the *horizontal* wire to the upper extremity of the shadow of the 'marker,' and on the right vertical line in the diagram, beginning at the point crossed by the horizontal line, measure vertically this distance, designating that point '0.1.' In the same way measure and mark the vertical distance from shadow of horizontal wire to

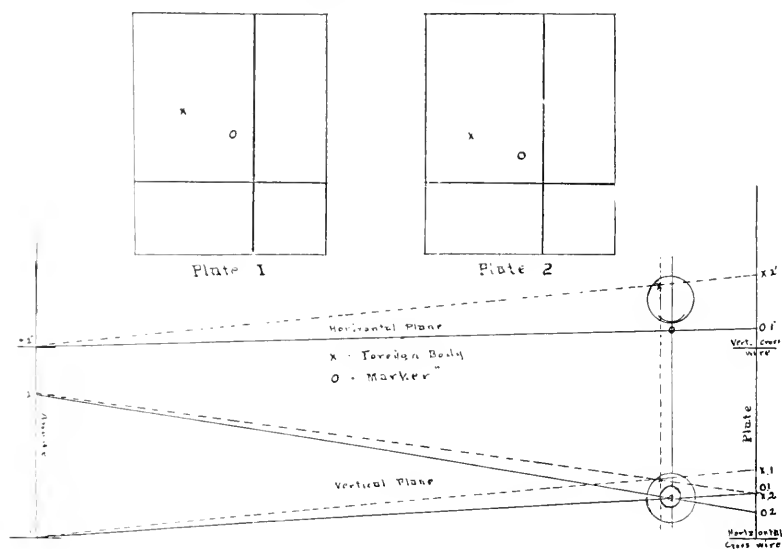


Fig. 6.—Localization as determined by Dr. Vard Hulen.

shadow of foreign body 'X, 1.' Now take Photograph 2, measure and mark shadows of the foreign body and 'marker' on same vertical line as with Photograph 1, designating the point of the foreign body 'X, 2,' and that of the 'marker' 'O, 2.' Then connect by a continuous straight line point '1' on left vertical line with point 'X, 1' on right vertical line, also by a broken line with point 'O, 1'; connect point '2' in a similar way to 'X, 2' and 'O, 2.'

"It is evident that the point where the *continuous* lines cross represents the location of the 'marker,' and that the point where the *broken* lines cross is the exact location of the foreign body in the vertical plane. As the relation between the eye and the 'marker' is known, draw schematically an eye according to its anatomic measurements in its correct position, using the vertical measure-

ment previously made from the center of the cornea to the upper extremity of the 'marker.' The location of the foreign body to the eye in the vertical and lateral meridians is thus made plain.

"Now for the upper part of the figure. Mark a point on the left vertical line '1' and also a short line at the corresponding horizontal point on the right vertical line. Then in Photograph 1 measure the distance from the shadow of the *vertical* wire to the shadow of the 'marker' and mark the point of that measurement above the crossing of the short line 'O, 1.'; also measure the distance from the shadow of the foreign body, and, as above described, mark it 'X, 1.' Connect point '1' by a continuous line to 'O, 1.' and by a broken line 'X, 1.' Then erect across the paper

**MODIFICATION OF DR. SWEETS CHART
FOR
PLOTting LOCATION OF FOREIGN BODIES IN THE EYE AND ORBIT
BY JOHN E. WEEKS M.D. AND GEO. S. DIXON M.D.**

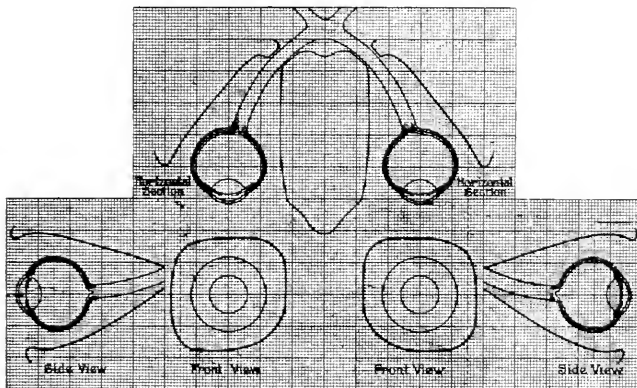


Figure 7.

a perpendicular continuous line through the point corresponding to the 'marker' and a broken perpendicular line through the point corresponding to the foreign body in the lower part of the diagram. Again it is evident that the points where these lines cross above lines will mark the exact location of the 'marker' and the foreign body in the horizontal plane. Again draw the eye in its correct relationship to the 'marker,' using the other measurements from the 'marker' to the apex of the cornea. Thus the location of the foreign body in relation to the eye in its horizontal meridian is revealed and the localization is complete."

Sweet of Philadelphia¹ was probably the first to seriously take

1. Trans. Amer. Ophth. Soc., 1897, p. 88.

up the work of localizing foreign bodies in the eye by means of the x -rays.

Mackenzie Davidson published the first description of his method in the *British Medical Journal*, Jan. 1, 1898. The methods developed by both of these gentlemen are excellent. Both deserve much credit. The plan of producing stereoscopic pictures was first introduced by Mackenzie Davidson, who effected it by making two exposures on separate plates, as follows: Before the first exposure is made the tube is shifted 3 centimeters to one side of the anodal axis exactly in the horizontal or vertical plane, and the second exposure is taken with the tube 3 centimeters to the opposite side. The patient must not move his head from the beginning of the first to the conclusion of the second exposure. The distance from the perpendicular on either side, which should be equal, may be varied at the will of the operator. The distances mentioned give good stereoscopic views.

At the present time, Mackenzie Davidson employs a couch, placing the patient in the recumbent position. The Crookes tube is placed in a box lined with lead oxide which is impervious to the x -rays and serves to protect the operator from their effects, and the box is placed on "ways" arranged under the couch so that the tube may be readily adjusted to any desired position.

The modification of Mackenzie Davidson's apparatus, as devised by B. Schumayer,² made for the purpose of simplifying the process and of making it more accurate, does not simplify, nor does it add to the accuracy of the determination.

A. Köhler³ employs a method based on the motility of the eye to determine the presence of the foreign body *in the eyeball*. Three negatives may be necessary: First, a lateral or sagittal skiagram with the eyes quiet (patient looks in one direction, may or may not fix an object). A relatively sharp shadow of the foreign body is obtained on this plate. A lateral or a sagittal skiagram is now taken. If lateral, the patient is directed to move the eyes slowly upward or downward during the exposure. The shadow of the foreign body obtained will be blurred if the foreign body is situated in the eyeball, except it be small and in the axis of rotation. If a sagittal exposure is made, the movement of the eye is from side to side. A blurred shadow of the foreign body is obtained. While this method is sufficient under favorable conditions to show that the foreign body is situated in the eye, it may fail if the foreign body is small and located at the center of rotation of the globe. It is of no value

2. Fort. a. d. Gebiete d. Röntgenstrahlen, iv. p. 81.

3. Fort. a. d. Gebiete d. Röntgenstrahlen, 1902, 1903.

if the globe is fixed. Again, the method gives results that are too crude, as the exact part of the eye in which the foreign body is lodged can not be determined.

The methods of Leyy-Dorn,⁴ of Burka,⁵ of Remy and Contre-moulin⁶ are not applicable to the eye. Professor Barrell's method⁷ could be employed, but is not so free from possible error as are methods of Sweet and Mackenzie Davidson.

Dr. Fox of Philadelphia employs a device for locating foreign bodies in the eye by means of the *x*-rays which differs materially from the methods described. (For an illustrated, detailed description of Dr. Fox's method see "Diseases of the Eye," Fox, page 374.)

Dr. Fox's method is attended by more difficulty than some of the others and is not more accurate.

Dr. Cowl of Berlin has recently published a new method of localizing foreign bodies in the eye, which consists in making one lateral view through the side of the head and another with the plate placed in the mouth, and the tube placed directly over the head so that the shadow is cast downward upon the plate, and therefore shows the antero-posterior distance. In using this method, it is, of course, necessary to place on the orbit or in some position near it wires or pieces of metal which may be used as guides in making measurements. The shadow will then show the position of the foreign body with reference to these metallic "markers"

Fluoroscopy, which has been elaborated by P. Bernbach of Colougne,⁸ is not of value in locating foreign bodies in the eye orbit for a number of reasons. One is that it often happens that the foreign body is so small that it can not be recognized with the fluoroscope; another, that if it is seen, its exact location in eyeball or orbit can not be satisfactorily determined. In some cases in which the foreign body is large and the question to be settled is its approximate location, the fluoroscope may suffice. Movement of the shadow of the foreign body on movement of the eye would suffice to show that the foreign body was in the eye, but if it did not move, the fluoroscope would not suffice to determine whether the foreign body was or was not outside of the orbit.

Charts for plotting the position of the foreign body in the tissues of the eye and orbit are convenient, as an illustration of the location gives one a much better idea than is given by a record of measurements only. Sweet's chart is a very excellent one, so

4. Deutsch. Med. Woch., 1897, p. 13.

5. Deutsch. Med. Woch., 1896.

6. Bull. de l'acad. de médecine, xxxvii, May 30, p. 354.

7. Arch. of the Roentgen Rays, 5, p. 29.

8. Fortd a. d. Gebiete d. Roentgenstrahlen, vii, p. 33.

far as the eyeball itself is concerned. In the writer's opinion other details should be added. The chart which is here presented (Fig. 6) is a modification of Dr. Sweet's chart. It combines the outlines of eyeballs, nerves and orbits in three planes on a field traced in millimeters. By means of this chart the location of the foreign body when plotted can be seen at a glance. Its size and its distance in relation to parts of the eye and orbit can be readily determined in millimeters by the area that it covers and by the place that it occupies on the chart.

MAGNETIC PROPERTIES OF STEEL ALLOYED WITH OTHER METALS.*

WILLIAM M. SWEET, M.D.

PHILADELPHIA.

Considerable attention has been given in recent years to the changes in the physical properties of steel which follow the addition of other metals, and the results of investigations conclusively prove the value of these metals in increasing the tensile strength, wearing qualities and ductility of the alloyed steel. These so-called steel-hardening metals include nickel, chromium, manganese and the rarer metals, tungsten, molybdenum and others of the same group.

Apart from the commercial value of a determination of the physical properties which these metals impart to steel, the subject of the magnetic properties of alloyed steel is of considerable importance to the ophthalmic surgeon, in view of the possibility of ocular injury from splinters as these newer steels become more extensively used in the construction of tools and machinery and compose the raw material which must be manipulated into finished products by the workmen. It is possible that, since these steels possess tensile strength and ductility greater than is found in the ordinary grades of steel, the liability of these metals to break and chip will be less, and there will consequently be fewer instances of injury to the eyes from flying particles.

My attention was first directed to the importance of a knowledge of the magnetic properties of the different steel alloys by the following case referred to me for radiographic examination by Dr. W. W. McClure:

J. B., a machinist, came to the Wills Hospital on Sept. 16, 1904, with injury of the right eye caused by a splinter of steel from a casting which he was chipping. There was a wound of the cornea near the lower inner corneo-scleral junction, but the lens was un-

* Read before the American Ophthalmological Society, May, 1905.

injured. The *x*-rays showed a foreign body, 2.5 mm. by 1 mm., situated close to the ciliary body in the lower nasal portion of the globe. Attempts by Dr. McClure to extract the metal by the magnet failed, but he subsequently secured the body with forceps. Vision equaled 5/22. The piece of steel after removal was tested by the magnet and found to adhere so faintly that it could readily be brushed off with cotton. Inquiry of the man elicited that the metal was manganese steel.

For the purpose of determining to what extent the addition of the steel-hardening metals affect the magnetic properties of the alloyed steels, as shown by tests with the medium-sized magnet operated with the street-lighting circuit, I secured samples of the various steels from a number of the leading steel manufacturers. These samples were found to vary within wide limits in the percentage of the alloy contained in each, in the carbon and other constituents, and in the treatment the metal received in the process of manufacture, whether forged, cast, annealed or hardened, while several of the samples contained more than one of the steel-hardening metals. Although these are factors of importance in an accurate measurement of the magnetic properties of the several samples, they only indirectly bear upon the general question of the possibility of removal from the eyeball of steel alloyed with a given metal irrespective of its exact chemical constituents. The measurement of the magnetic permeability, residual magnetism and coercive force of the different grades of iron and steel have been accurately determined by investigators of known experience after years of labor, and as the tests I have made of the induction of the samples examined give results that are approximately the same, I have compiled the following table from the investigations of Hopkinson.¹ These figures give the principal constituents of each piece of metal tested and the ratio of attraction by the magnet (magnetic induction), and exhibit with greater accuracy the effect of the magnet than if expressed in pounds, since the pull as measured by a balance would vary with the shape of the particles, whereas the magnetic induction as shown in the table is based upon the total number of lines of magnetic force per square centimeter of the material.

Nickel Steel.—Nickel is more extensively used than any of the other steel-hardening metals owing to its greater cheapness and to the properties which it imparts to the finished steel product. Both nickel and iron are metals of strong magnetic properties, and the samples of low nickel steel which I have tested show characterist-

1. Phil. Trans. Roy. Soc., Vol. xxxv.

ies not unlike ordinary forms of steel. In the higher percentages of nickel, however, there was found a decided decrease in the induction in the pieces examined. Thus in three pieces of nickel steel and one of ordinary steel, each of 4 mm. cross-section, tested on the end of the magnet with the tip removed, the following power measured by spring balance was found necessary to overcome the magnetic pull and detach the pieces from the magnet: Bessemer steel, 8 pounds: nickel steel, 3.5 per cent., $7\frac{3}{4}$ pounds: nickel steel, 11.5 per cent., 6 pounds: nickel steel, 32 per cent., 2 pounds.

Specimen	Total Carbon	Manganese	Other Ingredients	Maximum Induction
Cast iron (gray)	3.45	0.17	.....	9148
Cast iron (mottled)	2.58	0.61	.....	10546
Cast iron (white)	2.03	0.38	.....	9342
Cast iron (malleable) . . . . .	.....	.....	.....	12498
Wrought iron . . . . .	.....	.....	.....	18251
Bessemer steel	0.04	0.20	.....	18196
Open-hearth steel	0.32	0.43	.....	18736
Hadfield Manganese steel	1.00	12.36	.....	310
Manganese steel, forged	1.29	8.74	.....	747
Manganese steel, annealed	1.29	8.74	.....	1985
Chrome steel, forged	0.68	0.02	1.19 Cr.	14680
Chrome steel, annealed	0.68	0.02	1.19 Cr.	13233
Tung-shen steel, forged	1.35	0.03	4.64 W.	15718
Tung-shen steel annealed	1.35	0.03	4.64 W.	16498

The relatively high magnetic induction of chrome and tungsten steels, and the almost total absence of magnetic properties of manganese steel is well shown by the above figures. Nickel steel is not included in the tables, but is considered separately.

Authorities differ as to the behavior of nickel steel in its magnetic properties under influence of temperature. Hopkinson¹ found that a specimen of nickel steel containing 25 per cent. of nickel to be non-magnetic at the ordinary atmospheric temperature, but on being brought slightly below the freezing point it became magnetic, and retained this property until it is brought up to 580 C., when it again becomes non-magnetic, remaining so after cooling to the ordinary temperature of the air.² Hadfield,³ however, believes that, in the absence of carbon and other elements, such as manganese, alloys of iron and nickel, will remain constantly magnetic whatever may be the treatment within the ordinary ranges of temperature. He experimented with three specimens of nickel steel containing approximately 15, 24 and 29 per cent. of nickel and 0.17 of carbon, respectively, and although the samples were heated and then quenched in a freezing mixture to 11 degrees F., no change could be detected in the magnetic susceptibility. I experimented by heating and cooling two samples of nickel steel, one with 11 and the other 30 per cent. of nickel, and found no change

2. Ewing, *Magnetic Induction in Iron and Other Metals*.

3. *Proc. British Inst. Civil Eng.*, March, 1899.

in the magnetic induction of the pieces as compared with the same metal untreated.

Nickel steel is extensively used in the metal industries. Practically all the armor plate and exposed parts of modern war vessels are now made of nickel steel, the metal possessing hardness to resist perforation, but also having ductility and elasticity to resist cracking of the plate should perforation occur. The toughness and resistance to wear of nickel steel had led to its employment for axles, railroad forgings and for railroad rails, the alloyed rail having a life equal to about four of the ordinary steel rails.⁴ The percentage of nickel in the steel used for these purposes is approximately 3.5. A small percentage of chromium is often incorporated with the nickel steel. In the manufacture of tubes for marine and locomotive boilers and for other purposes requiring a metal of great strength with high elasticity, a nickel steel containing from 25 to 32 per cent. of nickel is now employed to some extent.

Manganese Steel.—Manganese is added to steel to produce a metal of great hardness and ductility, the percentage of manganese being approximately 12, with carbon about 1 per cent. This grade of metal is known as Hadfield manganese steel, and is used in rock crushers, mine car wheels, and in the frogs and crossings of street railways. Practically all the manganese steel of commerce contains over 10 per cent. of manganese, as steel from 2 to 7 per cent. is brittle, and can be pulverized under a hammer like glass. Even the 12 per cent. steel requires special treatment to give it toughness and elasticity.

Manganese deprives the steel into which it is introduced in any considerable extent of its magnetic properties almost completely, and this non-magnetic condition is the same whether the metal is cast or forged. Even with the strongest magnet the particles of manganese steel hardly more than adhere to the tip of the magnet. Considering that the strongly magnetic metal, iron, is present in quantity over 8 times the amount of the manganese, it is curious that the metal should show almost complete absence of magnetic properties. In ocular injuries from this metal, the magnet is therefore useless, and treatment must be the same as for the other non-magnetic metals. In a large plant in this city which works up manganese steel into finished forms, it is found that particles of the metal entering the flesh are always followed by severe inflammatory reaction unless promptly removed. With the exception of the case reported in this paper, where the piece of manganese steel

4. Production of Steel Hardening Metals. J. H. Pratt, U. S. Geol. Survey, 1902.

remained in the eyeball for a period of two weeks without causing any excessive inflammation, no opportunity has arisen to test the action of manganese steel on the ocular structures.

Chromium Steel.—Chromium is used as an alloy of steel either alone or in combination with nickel or tungsten. Chromium steel is employed in the manufacture of burglar proof safes and to some extent in the manufacture of tools. The metal is extremely hard, and has therefore proven of value in the manufacture of armor piercing projectiles. Like nickel, chromium is magnetic, and the magnetic properties of the alloyed steel is not markedly changed in induction by the addition of the chromium, which is used in the proportion of 3 to 5 per cent. in the commercial chromium steel. In ferro-chromium, which is the form in which the metal is supplied to the steel manufacturers for the making of chrome steel, the chromium is present in from 65 to 70 per cent., this metal showing strong magnetic properties.

Tungsten Steel.—Tungsten is used in the proportion of from 3 to 10 per cent. in the manufacture of tungsten steel, the resultant steel being especially valuable for the manufacture of high-speed tools and in the making of magnets. The supply of tungsten is not equal to the demand, and the metal is therefore employed as yet only to moderate extent. Tools made of tungsten steel hold their edge even at red heat, a factor of considerable importance in some industrial operations. Tungsten is a metal of strong magnetic properties, its residual magnetism exceeding that of any of the other metals. The magnetic movement of both iron and nickel is increased by the addition of tungsten, and there is made both a tungsten-nickel and tungsten-chromium alloy of steel. The ferro-tungsten, the form of metal used by the steel makers in the production of tungsten steel, contains from 30 to 80 per cent. of tungsten, the magnetic induction of the metal remaining high.

Conclusions.—It is therefore seen that, with the exception of manganese steel, the magnetic induction of steel is only slightly affected by the addition of the steel-hardening metals. In the higher percentage of nickel steel some difficulty would be experienced in the removal of a splinter of this metal from the eye, particularly if the body were covered with exudation.

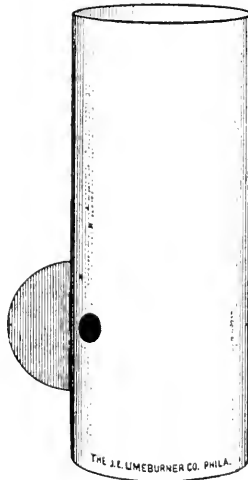
A SHIELD FOR THE EYE IN SKIASCOPY.

J. N. RHODES, M.D.,

PHILADELPHIA.

I have found that the continual use of the retinoscope tires my left or unused eye, to such an extent that some days I have been unable to continue at the work.

In trying to overcome the difficulty I constructed a sheet iron shade with a half inch brass tube attached at right angles extending about two inches. I fixed a carrier upon this tube upon which to hang my retinoscope. The result was a great relief to my eyes, but the tube seemed to be too much in the way. Then I made another one with a lip extending out about an inch and a half, as shown in the cut, and I found that it worked perfectly. This shield,



or lip, permits the user to get close to the source of light, which, of course, enables him to get more light, and allows him to move away to any distance without the light shining into his left, or unused eye. It also allows the refractor to keep both eyes open while using the retinoscope.

I have now had a shade made from asbestos upon this plan, as will be seen by the cut. An eye shield should be attached to all shadow-test shades, whether they contain an iris diaphragm or not.

I know this shade will take a great strain off the retina, and anyone using it will wonder how they ever got along without it. It will, in truth, much shorten the time consumed in shadow testing, and, thereby, will be quite a gain as well as a comfort to the patient.

EXOPHTHALMOS CAUSED BY DISEASE OF THE ETH-
MOIDAL CELLS AND FRONTAL SINUS—
DRAINAGE—RECOVERY.

RICHARD H. JOHNSTON, M.D.,

Assistant Surgeon and Pathologist to the Presbyterian Eye, Ear and Throat
Hospital; Demonstrator of Laryngology in the University of
Maryland School of Medicine.

BALTIMORE.

J. B., colored, 27 years old, came to the Presbyterian hospital, April 28 of the present year, with marked exophthalmos of the left eye. He had had no previous illness. He stated that the eye had begun to project the Friday before and had gradually grown worse. At the time of his entrance into the hospital, the exophthalmos was so pronounced that the lateral muscles did not act at all, while the movements above and below were very slight. There was no edema of the lids or conjunctiva. Vision was normal. The patient complained of pain in the upper part of the eyeball, especially on pressure, and headache over the eyes, which was worse on blowing the nose. On palpation nothing abnormal could be detected in the orbit. From the rapid development of the condition, an acute trouble was suspected. The ophthalmoscope showed a typical choked disc. Dr. H. Harlan, who examined the eye, referred the patient to me for nasal examination. The right nostril was normal. In the left nostril there was a septal ledge which prevented a clear view of the nasal bones. Cocaine and adrenalin were applied and 15 minutes later the nose was again examined. The tissues were shrunk and pus could be seen between the middle turbinate and the outer wall of the nose. I attempted to pass a probe into the frontal sinus. The withdrawal of the instrument was followed by an escape of pus. Dr. Harlan was notified of the result of the examination and decided to keep the patient in the hospital and await developments. The following days the same treatment was repeated with a discharge of pus each time. With the first outflow of pus the eye began to improve and in three days' time was almost normal. One week after beginning treatment of the accessory cavities, the eye had returned to its normal position in the orbit and the movements were as good as in the healthy eye. The choked disc was rapidly disappearing and the pain over the eyes was much improved. Careful probing of the ethmoid cells revealed rough bone. Pus was still present in the nose. I am inclined to think that the exophthalmos was due to an acute exacerbation of a chronic disease of frontal and ethmoidal

cells. The patient was one of the most stupid of his race and it was impossible to get a clear history of the case.

What was the mechanism of the exophthalmos in the above case? Since there were no symptoms of orbital abscess and drainage of the accessory cavities promptly cured the condition, it must be assumed that the accumulation of pus in the frontal and ethmoid cells caused a bulging of the thin body walls between these cavities and the orbit with consequent pushing forward of the eyeball. Prompt treatment relieved the patient before the pus could break through into the orbit and set up abscess.

Schmiegelow and Jacqueau have reported similar cases. In Schmiegelow's case there was an acute frontal sinus empyema. Both symptoms disappeared in 14 days. Such cases are unusual. In the above case we may say that the exophthalmos was the only external symptom of an accessory cavity disease. In exophthalmos from sinus disease there is usually orbital abscess which is a serious complication. Cortiax in his work has recorded several observations of fatal orbital phlegmon from accessory cavity disease. One case—that of Fisher—showed at autopsy a direct connection between the abscess and the frontal lobe of the brain. Foucher saw a case of orbital phlegmon follow antrum disease. Death resulted and the autopsy showed brain abscess. Snell reported a similar case. The records of such cases teach that we must treat exophthalmos from these causes promptly and fearlessly. In every case of doubtful exophthalmos a careful examination of the nose and the accessory cavities should be made.

819 Park Ave.

TWO CASES OF MELANOSARCOMA OF THE CHOROID.*

CHAS. J. KIPP, M.D.,

NEWARK, N. J.

CASE 1.—A DIFFUSE MELANOSARCOMA OF CHOROID WITH UNUSUAL CLINICAL FEATURES.

CASE 2.—A SMALL CIRCUMSCRIBED MELANOSARCOMA OF CHOROID WITH EARLY INVASION OF THE SCLERA.

CASE 1.—F. W. W., aged 40, of spare build, but in good health. He was first seen on June 4, 1901. He was seeking relief for pain and inflammation of his right eye. The left eye was normal. In the right eye the ocular conjunctiva adjoining the lower outer margin of the cornea was raised in the form of a bleb by a light yel-

* Read at the meeting of the Am. Ophth. Society, May 11, 1905.

lowish fluid, and the superficial vessels were somewhat injected. The swelling extended about 1 mm. outwards and was most prominent at the corneal margin. There was no deep-seated injection. Elsewhere the ocular conjunctiva was normal in appearance. The cornea was perfectly normal, the anterior chamber was of normal dimensions, the iris was normal; the pupil of the same size as that of the other eye and active. The lens and vitreous body were perfectly clear. The optic disc was normal in appearance and so was the retina, except at the outer periphery, where it was somewhat milky and apparently detached. The milkiness did not extend to the region of the macula.

The eye was emmetropic and $V.=6/5$. The visual field was defective in nasal periphery. Tn. He stated that his eyes had never given him any trouble up to three months ago. At that time while splitting wood, a fragment of the same struck him on the right temple and brow. This was followed by a black eye. This passed away and left his vision unimpaired. Since then he has had three attacks of pain and swelling just like the one from which he is suffering now. Between the attacks the eye had given him no trouble whatever.

He was again seen a few days later when the bleb had entirely disappeared and the anterior part of the globe was apparently normal. On December 21 he came again. He had now another attack of pain and chemosis just as before. He stated that he had had several similar attacks since his last visit. In this date it was found that vision was reduced to less than $5/60$. The ophthalmoscope showed that the opacity of the retina now involved the region of the macula. The temporal periphery of the retina seemed more transparent, and the detachment had apparently disappeared. Beneath the hazy retina, especially at the periphery of the opacity, shoals of dark pigment were visible; some of the pigment was apparently also in the retina itself. The opaque area extended to the disc, and two or three disc's diameters outward, and about one disc's diameter above and below the yellow spot. The opaque area was crossed by a large vessel of very bright red color, running from the disc toward the temporal periphery; it was best seen with a $+2$ D., while the disc was best seen without a plus glass behind the ophthalmoscope. No choroidal vessels were visible anywhere. The visual field was contracted above and below and there was an absolute scotoma extending from the point of fixation, 50° inwards and on an average about 15° above and below. He could count fingers at 5 feet. Tension was still normal.

A few days after this visit he was seen again. The chemosis and the injection had disappeared. At this visit the patient informed me that he had seen Dr. Knapp and had been told by him that he had a tumor in his eye.

In October 12, 1902, he had another attack of pain, injection and edema of the ocular conjunctiva. The fluid under the conjunctiva was of a yellowish color. The ophthalmoscopic appearance was about as before, there was no decided increase in the dimensions of the opaque area of the retina, and it was no more

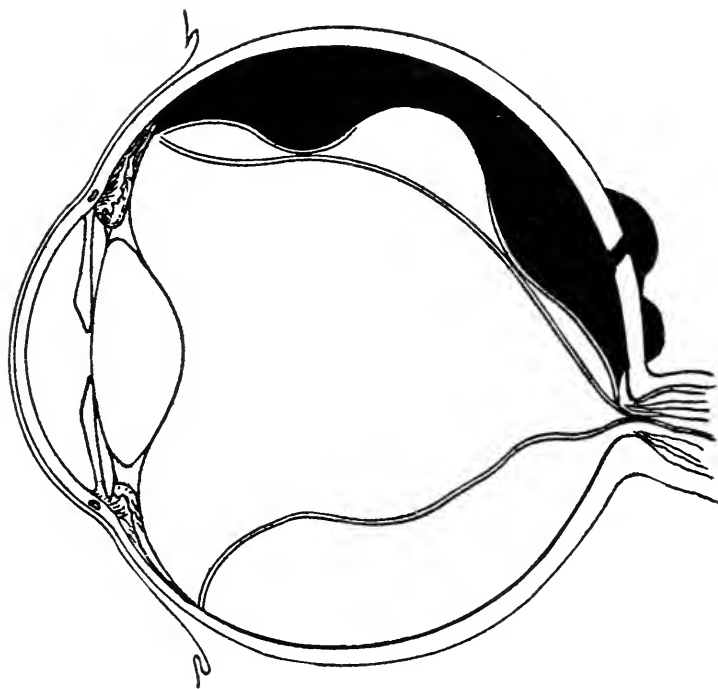


Figure 1.

prominent than before. This attack passed away in a few days under instillations of cocaine and boric acid solutions.

On February 19, 1903, he came again with an attack like those previously described. He had much pain and the chemosis was more extensive, involving the whole lower half. The pupil was somewhat dilated at this visit, and on closing the good eye, it expanded very widely. At this time I found detachment of the retina below. The disc is seen without difficulty and is apparently normal. The opaque area of the retina is unchanged, except that more dark pigment is visible under its peripheral portion. There are now also seen masses of dark pigment under this trans-

parent retina on nasal side of disc. Tn. The attack passed away like the others in a few days.

On May 8 he had an attack of catarrhal conjunctivitis in *left* eye. The ophthalmoscopic examination of this eye was negative, V.=6/5. Visual field intact.

On May 21, he had another attack of pain, injection and chemosis. The eye was now totally blind. I advised enucleation of the eye. On May 23 I removed the eye. The wound healed in a few days.

May 18, 1904. Has been in good health since last report. Ten days ago had pain in forehead both sides, followed by vomiting next day. Skin of forehead and both sides of nose so sore that he could not touch it. Eye was not affected. Pain over left brow has continued off and on since. Yesterday afternoon noticed for the first time that left eye was red. Now injection of outer half of sclera, edema of conjunctiva same side only. Only conjunctiva vessels are injected. O. negative. V. = 6.5 +. Visual field intact for white—blue and red only 15° from fixation, green 10°. Vessels contracted promptly after adrenalin. A large wart has developed on the outer side of right nostril a short distance from orifice.

April 2, 1905. Is in good health, has been at work ever since last report. No signs of local relapse. Right eye normal. Has not had another attack of conjunctivitis since last report. The papilloma at orifice of nose has not grown.

The anatomical examination of the eye showed it to be of normal form: the exterior of the globe was normal, except at posterior pole, where about a mm. to the temporal side, in about the horizontal meridian, there was found a hard nodule, in appearance like cartilage about the size of a lentil, and a dark colored nodule somewhat larger, about 5 mm. further outwards and between these two in horizontal meridian was seen a large distended vein. The retina was found detached except over portions of tumor where it seemed to be fastened. The subretinal exudation was coagulated. The optic papilla was flat, not excavated. In the temporal half, the choroid was of very dark color, was very much thickened throughout, in most places it was about 3 mm. thick, but in three places in different parts of the temporal half, it was from 6 to 7 mm. thick, thus giving it a nodular appearance. These elevations arose gradually out of the flatter parts with sloping sides and rounded crests. The thickened part of the choroid extended antero-posteriorly from the ciliary body to the optic disc, above it reached the median line, below it

extended somewhat beyond the median line. The nasal half of the choroid did not seem much altered. The ciliary body was apparently normal, the lens was in its place and transparent. The iris was not thickened. The anterior chamber was of normal dimensions and the cornea was perfectly normal in appearance. (See Fig. 1.)

The microscopic examination showed this growth to consist mostly of pigmented polygonal cells. In most parts of the tumor, the pigment present was so abundant that the form of the cells could be made out only with difficulty. Areas of non-pigmented cells, mostly spindle-shaped, were in some places found surrounded

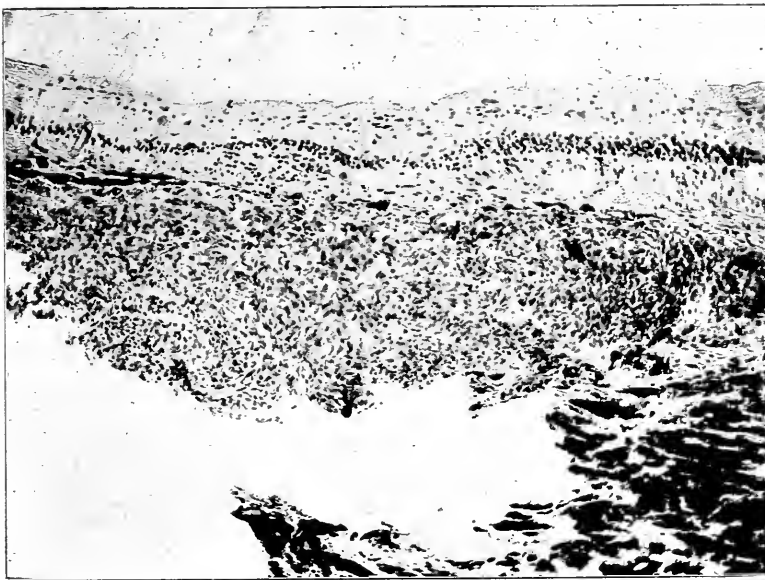


Figure 2.

on all sides for some distance by densely pigmented cells. In other parts, groups of non-pigmented cells, distinctly spindle-shaped, were seen in contact with the sclera and in other portions, under the vitreous lamina. In other parts islands of non-pigmented cells were seen within large areas of pigmented cells. The cells were everywhere densely crowded together. Scrapings from the surface of the sections of the tumor, made before the eye was put in the formalin solution, showed that both spindle-shaped and polygonal cells were present. A very distinct shining nucleolus could be seen in the oval or round nucleus of the non-pigmented cells. Pigment was present also in the form of very minute particles,

in large clumps, and in shoals. In some parts nothing but clumps of pigment imbedded in a glassy structureless mass could be seen. The growth had destroyed the suprachoroidea in many places. In other parts sarcoma cells filled the separated laminae of this layer, thus presenting an alveolar or plexiform arrangement. (See Fig. 2.) The growth had invaded the sclera in several places and had almost entirely destroyed it in some parts. Several large vessels perforating the sclera were lined in their interior by fine dust-like particles of pigment. The epibulbar growths previously noticed consisted almost entirely of non-pigmented round cells between which there was scarcely any intercellular substance. A few pigment cells were scattered among the non-pigmented cells. In the center of one of the epibulbar nodules a large collection of red blood cells was found. The growth had only in a few places, corresponding to the highest elevation, broken the vitreous lamina. A layer of fibrous tissue was found between the vitreous lamina and the retina. At the summit of the growth the retina was adherent to this layer of fibrous tissue and had undergone fibrous degeneration. The growth was but poorly supplied with vessels. Most of those in the thicker parts of the growth were without distinct walls, they seemed to be merely vascular channels in the growth. In some parts the walls of the vessels had undergone hyaline degeneration. The choroid adjoining the thickened part was densely infiltrated with round cells for some distance from the edges of the tumor, but whether they were white blood corpuscles or young sarcoma cells, I could not make out. The growth had not invaded the optic nerve or the retina.

The anatomical diagnosis is therefore diffuse melanosarcoma of choroid, consisting chiefly of pigmented polygonal cells and unpigmented spindle cells, which has invaded all layers of this membrane, perforated the sclera and has extended outside of the globe.

I regret that I have been unable to formulate for myself a satisfactory explanation of the peculiar clinical features of this case. That the localized edema of the eyeball was due to a lymph stasis goes without saying, but why this occurred only at intervals of weeks and lasted only for a few days, I do not understand. When I first saw the case I considered the edema due to filtration. I thought that a small wound in sclero-corneal margin now covered by conjunctiva, the result of the traumatism, might permit the fluid to escape from the anterior chamber, but this had to be given up, as no opening could be found. The pain with which the edema was ushered in made me think of increased tension, but careful and repeated examination of the eye, soon after

the beginning of an attack, failed to reveal either an increase in tension or, indeed, any symptoms of glaucoma besides the pain. The anterior chamber was always found of normal dimensions. There was, moreover, no deep-seated injection during the attacks, only a few of the superficial conjunctival vessels being injected.

The fact that this patient had a somewhat similar attack of localized chemosis in the other eye, some time after the enucleation of the eye which contained the sarcoma, and that this also was attended by intense pain over the left eye and, indeed, the whole forehead, and that it was followed by vomiting, would seem

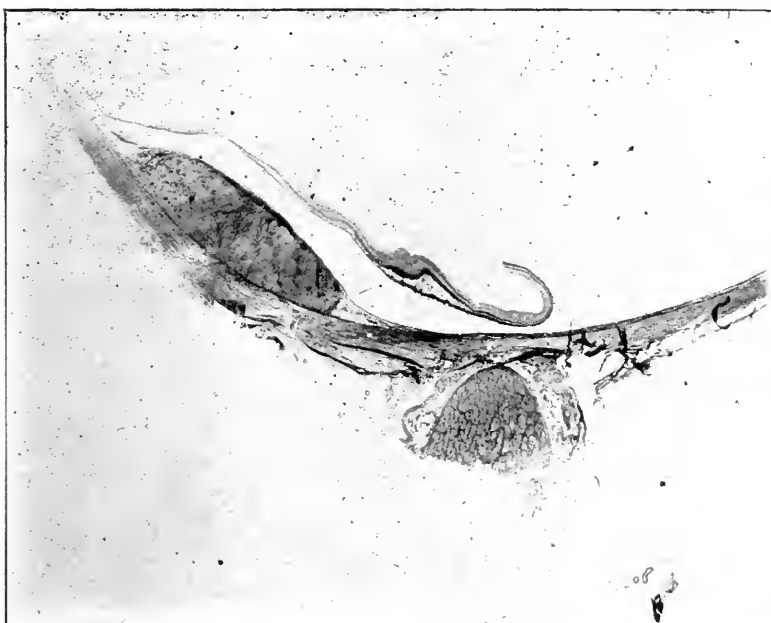


Figure 3.

to point to a neuralgic character of the attack, though he never had similar attacks before he sustained the injury to his right eye, nor has he had any for the past year.

A point of interest in this case is also the fact that a blow on the eye preceded the development of the sarcoma by about three months. There is no evidence that the globe was perforated, but the marked changes in the temporal periphery of the retina, found at the first examination, make it highly probable that the traumatism had a share in their causation.

So far as my reading goes, there is no case on record of a sarcoma of the choroid in which the symptoms were similar to those

present in this case, and this must be my excuse for putting the case on record.

CASE 2.—Mrs. H. F., 50 years of age, in good general health. Neither parents or sisters or brothers have eye disease, or have had malignant disease of any part of body. The right eye is normal. Myopic astigmatism. — 1.50 D. ax. 180° V. = 6/5. A few weeks ago noticed blur before left eye which has gradually increased till now, February 28, 1904. Has an absolute central scotoma. Periphery of visual field not contracted. Externally eye is normal. Media clear, disc normal, retina normal except just below macula, where it is opaque and somewhat prominent.



Figure 4.

This opaque area is somewhat larger than the disc and at its margin the choroidal pigment is irregularly distributed. The surface of opaque portion is best seen with a + 2 D. glass, while the rest of the fundus is slightly myopic, about 1.5 D. The tension of the eye is normal. She complains of occasional pain in eye.

Two months later the opaque region was somewhat larger, and more prominent, otherwise there was no change. No increased tension. I enucleated the eye in April, 1904.

The wound healed in a few days. No relapse in orbit; patient's general health is still good, April 30, 1905.

I opened the globe immediately after its removal, and found

the retina in its place. (Fig. 3.) The tumor at the macula measured about 6 mm. in diameter and was not over 2 mm. in height. It was disc-shaped, and biconvex, tapering off at its edges. Its posterior edge lies 3 mm. from optic nerve entrance. The growth is covered by the pigment layer of the retina and its central part is in contact with the sclera, which it has invaded in several places. (Fig. 4.) The growth is made up of small non-pigmented spindle cells, mixed with a few pigmented ones. The adjacent blood vessels of the choroid are congested. The new growth is sharply outlined though not encapsulated. The retina was in its place. The other structures of the eye were entirely normal.

The point of interest in this case seems to me to be the early invasion of the sclera. The growth was probably only four months old; was only 6 mm. in diameter, and not more than 2 mm. in height when the eye was enucleated. While the tumor was distinctly circumscribed and the lamina vitrea was intact, it had destroyed the supra choroidea under its central portion, and had invaded the sclera to a considerable extent.

THE SACHS' LAMP FOR TRANSILLUMINATION OF THE EYE.

EDGAR S. THOMSON, M.D.

NEW YORK.

Transillumination of the eye has been practiced recently by Sachs of Vienna, Rochon-Duvigneaud of Paris, and Pooley of New York. Without knowing anything of the work of these gentlemen, I had been observing the possibilities of the method with a convex lens when, a few months ago, I found that Mr. E. B. Meyrowitz of New York was manufacturing a lamp after a model devised by Sachs. It consists of a twenty-five candle-power electric light, which is covered and bears a cone-shaped projector extending from the side of the light. This projector consists of a solid glass cone, silvered around the circumference, surrounded by a hard rubber shell which does not heat as the lamp is used. In using the lamp absolute darkness is necessary if the best results are to be obtained. The point of the cone may be placed against the sclera previously cocaineized, or against the upper or lower lid. Some little manipulation is necessary to get the proper illumination and the light must enter the eye at the proper angle. The

* Read at the meeting of the American Ophthalmological Society in Boston, May 11 and 12, 1905.

nasal side of the globe is more easily illuminated than the temporal, as the bridge of the nose interferes with the cone of the lamp. If the lids are held back the superior and inferior parts of the globe may be illuminated, though with about the same amount of difficulty as the temporal side. Prominent eyes are much more easily illuminated than receding ones, and lightly pigmented show better than heavily pigmented ones. Myopic eyes, as would be expected, illuminate well. Important details in the ciliary region and anterior part of the choroid that would otherwise be inaccessible may be studied, and certain conditions that show poorly with the ophthalmoscope show clearly under transillumination on account of the greater intensity of the light.

The details shown by transillumination may be briefly summarized as follows:

Cornea.—Very little additional information is to be gleaned here further than can be obtained by focal illumination, except that in some instances where the media are hazy localization of opacities is easier.

Filtration Angle.—Here we have a region of the utmost importance, about which we may obtain much useful information. Transillumination shows distinctly the width of the scleral projection at the limbus and the anterior limit of the ciliary body. In cases of wound extending into the sclera, we may thus observe the exact relations of the wound to the ciliary body—information which is often of vital importance. The scleral projection varies considerably in different individuals, being much deeper in some than in others. Adhesions of the iris to the filtration angle, small amounts of hypopyon or hyphema, inclusion of the iris in wounds, and, of course, any neoplasm at the filtration angle, show clearly and may be located much more definitely than by any other method.

Iris.—Atrophic or thin spots in the iris show very well. Very frequently, in cases of old iritis, the pupillary margin looks like a piece of lacework. In one case observed, in which atrophic iris was bound up in a membrane after cataract extraction, the iris could only be differentiated from the membrane by transillumination. By oblique light it was impossible to tell where the iris stopped and the membrane began.

Lens.—Details in the lens and anterior part of the vitreous show plainly, and it is easier to localize an opacity in a very hazy eye than by any other method of illumination.

Ciliary Body and Choroid.—The anterior and posterior limits of the ciliary muscle show distinctly, as well as the ora serrata.

Exudates or tumors, either of the ciliary body or anterior part of the choroid, may be plainly seen. Atrophy of the ciliary body and any beginning ectasia in the ciliary region show well. Foreign particles of metal show very distinctly, and may be seen even when the lens is opaque, under which circumstances they could not be localized in any other way, unless by the *x*-rays. They must, however, be near the sclera to cast a shadow and the vitreous must not be too densely infiltrated. It is by no means necessary that the vitreous be entirely clear. I have no doubt that it would be possible by transillumination to determine the exact position of a lens luxated into the anterior part of the vitreous, though I have had no opportunity to try it on such a case.

Retinal detachments are difficult to observe through the sclera on account of the faint intensity of the shadow cast, but if the lens is clear they may be seen through the dilated pupil in cases where the media are too hazy to allow of a satisfactory ophthalmoscopic examination.

Finally, on account of the variations in pigmentation of the uvea and the anatomic configuration of the orbit, there is a wide difference in the ease with which different cases may be transilluminated. Many can not be transilluminated at all and others only fairly well, but in a large number, perhaps the majority, it can be satisfactorily done, and it undoubtedly furnishes us with much valuable information which is often unattainable in any other way.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JUNE, 1905. VOL. XIV. NO. 6. NEW SERIES

Editorials.

LOCALIZATION OF FOREIGN BODIES IN THE EYE.

The ophthalmological world is slowly awakening to a realization of the immense importance of determining accurately the position of foreign bodies in the eye or orbit before attempting their removal, but that the subject has not received the consideration it deserves is evidenced by the cursory allusions that have been made to it by recent writers. It is the opinion of the writer that careful localization is desirable in all cases before the plan of operation is decided upon.

Fortunately we have now at our disposal methods that enable us to determine the presence of all magnetic foreign bodies, all foreign bodies that are opaque to the *x*-rays, and all other foreign bodies situated in the eyeball if the media of the eye are still transparent. The methods that are of value are ophthalmoscopy, sideroscopy, and skiagraphy and fluoroscopy by means of the *x*-rays.

Ophthalmoscopy can be employed in about 10 per cent. of the cases. In cases of opaque lens, of hemorrhage into the anterior or vitreous chamber, and in those cases in which the foreign body has penetrated into the tissues of the orbit, it is of no value. In cases in which the foreign body can be seen, ophthalmoscopy is the most valuable means, as the localization is accurate and positive and applies to foreign bodies of whatever nature.

The sideroscope, if properly constructed and properly mounted, is of service in indicating the presence of a magnetic foreign body in the eye or its vicinity. However, when it is used, care must be taken to exclude any other magnetic body from the "field" of the needle of the sideroscope, otherwise the results are unreliable. The impossibility of determining the location of the magnetic body within from one to three centimeters and the fact that the method is applicable to magnetic bodies only make sideroscopy of very little value.

Skiagraphy by means of the x -rays, the development of which for the purpose of ophthalmic surgery is due to the work of Sweet of Philadelphia, and of Mr. Mackenzie Davidson of London, presents a means of diagnosis which is wide in its application, as it can be used for all the metals (with one exception) and for glass. It is of no value in those cases in which the foreign body is of wood. The x -rays are harmless as at present used as far as the patient is concerned, and their application can be readily understood so that satisfactory localization can be performed by any educated man who will give it a little study.

The head-rest of Dixon now used at the New York Eye and Ear Infirmary and the triangulation method employed by Hulen of San Francisco (*Jour. Amer. Med. Assoc.*, April 3, 1904) afford a simple, accurate means of securing the skiagrams and a rapid means of plotting the location with apparatus that is inexpensive. The chart now published by Meyrowitz for graphically portraying the location of a foreign body fulfils the requisite in that direction. There is really no reason why any institution at which diseases of the eye are treated, or any private office which possesses the means for the development of a sufficient supply of x -rays, should not perform localization in a satisfactory manner.

Fluoroscopy is of little value, but is sometimes employed for gross work.

The magnet should not be used for diagnostic purposes, as its value when so used depends almost without exception on a change in the position of the foreign body. The magnet is essentially an instrument for the removal of the foreign body and not for the diagnosis of its location.

JOHN E. WEEKS.

A TREACHEROUS OPPONENT.

An army of medical men throughout this land is daily laboring to put at rest weary eyes, and to ward off the insidious tissue changes which often result from efforts made to maintain binocular vision. Ophthalmometer, skiascope, ophthalmoscope and the trial case are all skilfully brought into requisition. Yet even when robust health is enjoyed by patients, asthenopia very often persists. Apparently it is becoming more and more evident that the most formidable enemy in the way is a little muscle that never rests through waking hours. The ciliary muscle is becoming more and more respected. Attention seems to be turned, at least temporarily, away from the 'phorias and the extraocular muscles, and the individuals are diminishing in number who make no

attempt to conquer the well nigh irrepressible contractions of the tiny wheel muscle within the globe, and who are satisfied to prescribe the lenses which give the clearest vision, that is, to correct only the *manifest* errors of refraction.

An earnest attempt has recently been made by Dr. Lewis S. Dixon of Boston¹ to convince the indifferent and the skeptical, that something more is often needed than even the strongest and most protracted use of cycloplegics to uncover latent hyperopia and spastic conditions of the ciliary muscle. It is probably not generally known that in death this muscle relaxes to an extent impossible to obtain by any known method in life, and it would appear from Dr. Dixon's clinical experiences, that the old expedient of "fogging," used wisely, and skilfully, together with due treatment of the constitutional condition, will uncover latent conditions which otherwise would not become manifest for years.

Of course this does not imply or warrant the routine abandonment of these relaxing drugs, or of bromids, hyoscine, and other nerve sedatives. Besides, the "fogging" process naturally demands extra patience, and a coöperation on the part of the patient, not always to be obtained. But the method proposed appears sound, logical and practical. That it deserves serious consideration is attested by the experiences of many observant and careful oculists, especially when they had had opportunity to again correct the refraction of a patient whom they had carefully tested under atropin five, ten, or fifteen years before.

To those who are now and then, or often, disappointed by failure to afford relief to the nervous, the neurasthenic and hysterical (?), a careful reading of Dr. Dixon's articles will be of great interest, and they may be able to do more credit to themselves, and at the same time render highly appreciated services.

F. B. EATON.

1. Jour. Am. Med. Ass'n, April 22, 1905. Annals of Ophthal., April, 1905.

Reviews.

THE TREATMENT OF BLENORRHOEA NEONATORUM, BY DR. PFALZ OF DUSSELDORF.*

[Reviewed by Robert L. Randolph, M.D.]

The author takes up the cudgels for protargol, which he thinks has been unjustly treated by those who have remained loyal to nitrate of silver. He reminds us that protargol is especially deadly in its action upon the gonococcus and that it possesses no caustic property. In order to get its best effect the solution should never be prepared warm and should be fresh for every case. Indeed, after eight or ten days he makes it a rule to prepare a fresh solution. It may surprise some to learn that Pfalz sees no particular advantage in employing stronger than a 10 per cent. solution. How often in the course of discussions here in America we note that the best results appear to have followed the use of a solution which is two or three or even four times as strong. Pfalz, however, makes the statement that the strong solutions lose their potency sooner, that is to say, break up more readily than a 10 per cent. solution. While we seldom use the protargol more than once daily, Pfalz is in the habit of instilling it three times a day and once at midnight. It should be allowed to remain for some moments between the lids. He has gotten the best results from a 5 per cent. solution. After the third day he uses a 10 per cent. solution at noon and midnight, and morning and evening he uses the 5 per cent. solution. Along with instillations of protargol he employs irrigations of permanganate of potash. He repeats the irrigations as often as every hour in the early stage of the disease and lengthens the intervals as the condition improves, but they should not be entirely discontinued till every bit of the secretion has disappeared. If a chronic swelling of the conjunctiva remains he uses nitrate of silver once daily, as protargol is not astringent enough, although he continues with the instillation of the weaker solution of protargol once daily. The author is of the opinion that one of the chief advantages of the treatment with protargol lies in the fact that the latter possesses no caustic property and for this reason the treatment can be entrusted to the nurse. It becomes unnecessary then for the child to come to the

* Zeitschrift für Augenheilkunde, viii, 3.

clinic every day. He seems to think that protargol is an agent which is practically free of danger, or at least the treatment does not require the constant supervision which is necessary when silver nitrate is employed.

In this connection I might report the following case: A year or so ago I had under my care an old lady with blennorrhœa of the lachrymal sacs. I was in the habit of irrigating the sacs with glycothymoline. I remembered to have seen somewhere that protargol was valuable in this class of cases, so I determined to try it. I usually keep among my collyria an 8 per cent. solution of protargol. A syringe-ful was injected on both sides. The solution went down easily into the right sac and duct, but on the left side it failed to go through and there was considerable regurgitation so that the conjunctival sac was filled with the protargol solution, and as the head was held far back the cornea was pretty well covered, but only for a moment. She went immediately into the next room to sit a few minutes before leaving. I forgot to say that she relied principally upon her left eye, as the other eye was cataractous. About ten minutes later she knocked on the door to tell me that her sight was so hazy that she feared to go out on the street. A glance showed me a hazy cornea. The solution had acted as a caustic and had destroyed the epithelial covering of the eyeball. After twenty-four hours under a cool compress and an occasional drop of atropin the necrotic epithelium had been thrown off and new epithelium had taken its place. It is evident from this that protargol has caustic properties. So far as I know this case is unique. I had frequently used the same solution (I often use a 40 per cent. solution), but never with the slightest approach to an untoward result. The other cornea was absolutely unaffected, the protargol having passed readily down into the duct. It seems to me that a case like this one would at least suggest the wisdom of caution in dealing with protargol and that it would be unsafe to allow free rein to even the nurse. Such an effect in the case of an infant would probably be recognizable only to the physician, and I think in the treatment of blennorrhœa neonatorum, in the long run we will find so long as it is necessary to use the silver salts, that a daily inspection of the eye by the physician is the best policy. I have never been weaned from my allegiance to nitrate of silver. I am not so sure that this irritating property of which the friends of protargol complain, is not one of the valuable properties of the nitrate and in some way intimately bound up with and an addition to its astringent and germicidal properties. Reports from several of the large eye clinics

abroad show that when a case looks particularly unpromising that refuge is taken in the nitrate of silver, and even in fresh cases which look malignant that the nitrate of silver is used at once and always. **There are times**, then, when protargol fails to do what the nitrate has been accomplishing for so many years, and in view of the case which I have just put on record I can not regard it an entirely innocent product or one which can be entrusted with entire safety to members of one's household to use.

Reports of Societies.

ABSTRACT REPORT AMERICAN OPHTHALMOLOGICAL SOCIETY, BOSTON, MASS.

Forty-first Annual Meeting, May 11 and 12, 1905.

Dr. C. S. Bull, New York, presiding.

"A Case of Flat Melanosarcoma of the Choroid, with Unusual Clinical Features." Dr. C. J. Kipp, Newark.

The cause was traumatism, the patient, while splitting wood, having been struck in the eye by a fragment. There were recurrent attacks of pain in the eye and extensive but circumscribed edema of the ocular conjunctiva, without increase of tension, the attacks lasting from three to four days and recurring about every four or five weeks. Between the attacks the eye gave no trouble. Ophthalmoscopic examination showed detachment of the retina peripherally and tumor near the macula. The eye was enucleated a little less than a year after the first examination. Detachment of the retina was shown, except over the most prominent parts of the tumor. The tumor extended from the ciliary region to the optic disc, without involving either of these structures, above to the median line; below it crossed the median line somewhat—temporal half of the globe. The tumor was in most places only 2 mm. in height; in a few places it reached a height of 5 to 6 mm. The growth had perforated the sclerotic at several points, and an epibulbar growth was found in the region of the posterior pole. Microscopically the growth did not differ materially from the flat sarcomata previously described.

"Concerning Melanoma of the Choroid, with the Report of Two Cases." Drs. G. E. de Schweinitz and E. A. Shumway, Philadelphia.

The writers reviewed the literature of the subject and gave the clinical history of two cases of melanoma of the choroid, together with the microscopic examination of the enucleated eyeballs, the relation of melanosis and pigment deposits in other portions of the eyeball to the development of sarcomas, and in particular this relationship as it existed in the specimens under consideration. One of the patients had sarcoma and the other endothelioma of the brain.

“Metastatic Carcinoma of the Ciliary Body.” Dr. C. W. Cutler.

Patient aged 33. Mother and one sister said to have died of cancer. The patient had a breast removed for cancer about a year before present symptoms began. The middle of last August she began to have severe pain in the left eye; there was dizziness and vomiting and numbness of right arm and leg. Early in September tumor of the iris appeared and increased rapidly in size. Media clear, fundus normal. The tumor was grayish, slightly elevated, not sharply defined. The eye was removed because of intense pain, which was relieved; but patient died a month later of carcinomatosis. Microscopic examination showed that the growth was confined to the ciliary body and iris, and was carcinoma.

Discussion.—Dr. L. H. Taylor, Wilkesbarre, mentioned a similar case which he had first seen in December, 1900; called in consultation with the family physician to see a lady of about 65 with an eye intensely swollen, tension high, and at first it was thought to be hemorrhagic glaucoma. It was subsequently learned that the patient had had a detachment of the retina some time previously, over three-fourths of the field. After enucleation a condition of pigmented sarcoma of the choroid was found. The subsequent history was interesting, it being supposed that she would have a return of the trouble; she remained free from further trouble until the middle of the summer, when she developed sarcoma of the liver and died in August.

Dr. T. Y. Sutphen, Newark, had had a patient, a Sister of Charity, 85, who came with partial detachment of the retina of right eye. Presence of tumor could not be determined. Had had tumor of the breast on the right side removed about a year previously. The detachment gradually increased; iritis developed and tension increased. On removal of the eye a tumor was found which the microscope revealed as a carcinoma. The disease involved all the tissues back to the optic nerve. The patient died about a month later.

Dr. F. Buller, Montreal, said that, about twelve years ago, he had presented a specimen of sarcoma of the choroid, originating in the macula, about one-half the size of that reported by Dr. Kipp. He had thought he had the smallest sarcoma on record, but Dr. Noyes had shown him one only about one-half the size of his.

Dr. E. E. Jack, Boston, called attention to a case reported by him three years ago of double melanotic sarcoma, secondary to cancer of the breast.

Dr. J. E. Weeks, New York, said that sometimes it happens that we have a metastatic carcinoma of the choroid before the disease

has developed in other parts of the body sufficiently to be recognized, and referred to a case of that kind where the disease had originated in the lung, but showed the metastatic trouble in the eye some time before the symptoms were sufficient to call attention to the lung.

"The Sachs Lamp for Transillumination of the Eye." Dr. E. S. Thomson, New York.

The writer referred to the use of the Sachs Lamp for diagnostic purposes, detecting intraocular tumors, and said that it could be used for as long as a half-hour at a time.

"Improved Surgical Methods for the Successful Use of the Electro-magnet." Dr. R. Sattler, Cincinnati.

Dr. Sattler referred to the expediency of modifying our surgical methods, their technic, or both, for the successful removal of a foreign body from the interior of the eye, but which could not be seen or discovered by the methods ordinarily resorted to, and the actual presence of which and its location with equal precision could alone be determined by the disclosures of the x-ray photography. This important achievement was, in the main, due to the ingenious apparatus of Dr. Sweet. Presence and location of foreign body once determined and confirmed by several radiographs taken at different angles, the question at issue would be: 1. Shall we adopt the methods commonly resorted to, or, 2. fortified with more accurate information furnished by Roentgen rays and Sweet's apparatus, resort to the direct exposure and exploration of the region nearest the foreign body for the application of the magnet. The writer reported a number of illustrative cases, with the surgical methods resorted to in each. He thought that for certain cases of this class the method resorted to was safer and attended by less destruction or tearing of tissues.

Discussion.—Dr. E. E. Holt, Portland, Me., had been one of the first to report a series of cases of removal of steel from the vitreous. Since the use of the more powerful magnets he always entered the eye in the inferior temporal quadrant, rotating the eye upward. He had never had any trouble in getting the foreign body. In the first series of twelve cases, in nine the foreign body had not been located prior to operation. In the three in which the foreign body had been located there was more trouble than in the others. He agreed with the writer of the paper that it was safer to open the eye in the inferior temporal quadrant and introduce a small magnet than to undertake to pull the foreign body out with the large magnet, with the resulting tear of tissues.

Dr. W. B. Marple, New York, had, ever since the presentation

of Dr. Risley's paper two or three years ago, in which he advocated, where the foreign body was localized, withdrawing it by incision nearest the location, been personally in favor of that method. He thought it desirable that all the cases in which foreign bodies had been removed in this way be reported. Haab, he said, believed that the incision in the sclera tended to produce detachment of the retina, while Hirschberg claimed that this was not true. If detachment was not more frequent following scleral opening, it was certainly the most desirable method. He did not believe it right to place a patient before the large Haab magnet without an idea of the location of the foreign body.

Dr. W. M. Sweet, Philadelphia, referred to three hundred cases in which the method of localization had been employed in Philadelphia. He thought that where the lens is injured the foreign body might be removed through the anterior chamber, but where it has passed through and lodged at the posterior part of the eye, or where the lens is clear, it should be removed by scleral incision.

Dr. S. D. Risley, Philadelphia, said that, in his experience, there had not been any detachment of the retina, and he still held that if the foreign body had been present long enough to have attached itself to the membranes of the eye, the retina or choroid, that the probabilities of detachment were greater with the powerful magnet than where the body was localized, section made through the sclera, and the body drawn away from the sclera.

Dr. Percy Friedenbergh, New York, thought the magnet open to objection as a means of diagnosis because the findings were not absolute, and he thought that it was pretty well agreed now that the patient should not be placed before the giant magnet until the *x*-rays had first been used.

Dr. O. F. Wadsworth, Boston, had reported two or three cases of detachment to the society some years ago, following scleral incision, in one of which there had been 20/20 vision for two months after the operation, and then detachment occurred at a point diametrically opposite the wound in the sclera.

Dr. S. L. Zeigler, Philadelphia, said that we make the same incision for detachment of the retina, a posterior sclerotomy. Of course, if the magnet should tear the body loose and cause a detachment, that would not be the fault of the incision, but of the magnet, and might happen just the same in the anterior portion of the eyeball. He had never seen detachment follow scleral incision, and had never done but one operation in the other way. In that case the foreign body had entangled the iris so that an iridectomy had to be performed.

Dr. E. S. Thomson, New York, had been able to follow one case in which the foreign body had been removed by scleral incision, for eighteen months, the lens remaining clear, and no detachment taking place.

Dr. G. F. Fiske, Chicago, had one case where there was very little hemorrhage, located with the ophthalmoscope, and incision made at the posterior pole. The piece of steel removed easily. Vision was good for four or five months, when detachment occurred and the separation became complete.

Dr. G. E. de Schweinitz, Philadelphia, had recently gone over his cases, comparing those where the Haab magnet was used with those in which Sweet's localization had been employed, and the results were exactly the same, but he desired to go on record as believing, as Dr. Sweet had said, that the *x-ray* examination should precede the use of the magnet. He had never himself seen a detachment of the retina follow a scleral incision where the foreign body had been withdrawn through the incision.

Dr. P. A. Callan, New York, was sorry to say that his results with the scleral incision had been unsatisfactory; they had been much more satisfactory with the Haab method, and he was, therefore, a strong advocate of that method. He would always advocate bringing the foreign body into the anterior chamber, if possible, to avoid infection of the vitreous.

Dr. J. E. Weeks, New York, spoke of the removal of the foreign body after it had been gotten into the posterior or anterior chamber. He had recently had a case where the foreign body had been localized in the vitreous and he had succeeded in drawing it into the posterior chamber, where it impinged on the iris and could not be drawn into the anterior chamber. Incision was made in the cornea and the foreign body presented. Patient was then taken to the Haab magnet, but the body did not come away readily, until suddenly, to the astonishment of the operators, it came away with almost the entire iris. He would always hereafter make an iridectomy if the foreign body was in the posterior chamber.

Dr. Lucien Howe, Buffalo, thought the time which had elapsed after the accident was of considerable importance. On one occasion, when the foreign body had been lodged for some little time, he had found it utterly impossible to remove it, and when, after enucleation, he took the section of the eye to the magnet the whole thing pulled off, choroid and all.

"The Attractive Power of the Magnet upon Steel Alloyed with Other Metals." Dr. W. M. Sweet, Philadelphia.

The writer referred to the increasing use of nickel, manganese

and other metals in steel making; the employment of the alloyed steel in the manufacture of tools, etc., for industrial operations; the effect of these alloys in decreasing the magnetic properties of the steel, and, therefore, rendering the extraction of splinters from the eye by the magnet less positive. He compared the magnetic properties of these different metals, exhibited the different forms of steel and showed their action with the magnet.

"Remarks on the Use of the Roentgen Rays in Localizing Foreign Bodies in the Eyeball and Orbit." Dr. J. E. Weeks. New York.

Brief mention was made of the ophthalmoscope, the magnet, and the sideroscope in localizing foreign bodies in the eyeball and orbit. The relative merits of the different methods of employing the x-rays and the conditions that produce error were discussed, and the manner of plotting the location of the foreign body was considered.

"What Are the So-called Reflexes Which Can Be Properly Referred to Eyestrain?" Dr. Lucien Howe. Buffalo.

The author considered the criteria by which to judge whether or not a given symptom might properly be considered a reflex; reflexes from eyestrain manifested in the globe itself; in the accessory muscles of accommodation; in other portions of the body; testimony on this point furnished by others; and the character of such evidence. He had sent out 206 letters and received 105 replies, which he had tabulated. Twenty had not seen any of these reflexes. The writer concluded that personal equation entered largely into the reports; that the experience of observers shows beyond question that these different diseases and the symptoms mentioned can not honestly be ascribed to eyestrain; that an important cause of the confusion is lack of definite definition of symptoms and disease; difference in diagnosis of eye conditions, and he believed that we should endeavor to have some definite criteria.

Discussion.—Dr. B. Alex. Randall, Philadelphia, was not prepared to bring forward statistics nor to make any startling assertions with regard to reflex disturbances due to eyestrain, but he was very confident of the existence of such conditions; anatomical lesions in the retina, choroid and other portions of the eye, as well as various reflex neuroses, as a result of eyestrain. He had never seen epilepsy cured by this relief, but had seen it so mitigated that patients practically ceased to have attacks. He thought that if those who doubted would consider the matter further and carefully they would recognize that such things do exist.

Dr. Walter Pyle, Philadelphia, thought Dr. Howe deserved a great deal of credit for this work, but he had found his questions so

difficult to answer that he believed the conclusions negative as to any definite importance. He thought it wise to get some definite understanding about the matter, but to draw any conclusions from the indifferent manner in which the questions had been answered was impossible. With regard to the difference between function and organic changes he did not see where the line could be drawn, as functional trouble might result in organic change if long continued. He considered that the questions had been put in a very difficult way and that satisfactory answers could not be given.

Dr. Lucien Howe, Buffalo, in closing, said that, in regard to the character of the questions, he thought they had been put in as simple a way as possible. He had simply taken a catalogue and asked for answers, yes or no, and how many. He had been gratified and surprised that a majority did answer. Out of 206, 105 replied, which he considered a good percentage in sending out such circular letters. He thought we needed a patient investigation of the subject instead of dogmatic statements in regard to it. He thought that, attention having been called to the matter, a larger number would be induced to look over their cases and that we might be enabled to draw some definite conclusions.

"Symptoms Presented by the Different Bacteriologic Types of Acute Conjunctivitis." Dr. Alexander Duane, New York.

The writer made an analysis of 132 cases of acute conjunctivitis, in which a bacteriologic examination had been made, with the idea of determining, first, the prevailing types of bacterial infection in ordinary acute conjunctivitis, and, second, the distinctive clinical symptoms, if any, presented by these types. He thought that clinically we might distinguish three types: 1, palpebral, in which the lids principally were affected; 2, ocular, or the pink-eye form, in which the ocular conjunctiva is chiefly affected; 3, mixed form, in which symptoms of both types are present. In the gonococcal form the palpebral type generally predominated. The ocular type was considered as characteristic of the Weeks' bacillus, though it might cause the palpebral type. No positive inference could be drawn from the symptoms as to the kind of bacteria producing the disease. The staphylococcus albus and aureus were apt to cause corneal lesions.

Discussion.—Dr. J. E. Weeks, New York, agreed with the writer that you can not tell from the type of the disease what micro-organism is instrumental in causing the trouble; not without the aid of the microscope. It emphasized the necessity of examination of the secretions, which was really the only satisfactory way of determining the character of the infection. He also referred to the pos-

sibility of having an acute inflammation engrafted upon an old condition, as in trachoma, for instance, where an acute conjunctivitis might be started up.

"Relapsing Iritis." Dr. Hiram Woods, Baltimore.

The paper consisted in the study of nine cases of recurrent iritis, observed through periods of several years, with special reference to: 1. Cause; (a) original attack; (b) constitutional dyscrasia preceding or occurring after the ocular lesion; (c) influence of synechiae; (d) eye involved; (e) use of eyes and influence of ametropia. 2. Course; mode of onset, behavior of pupil, presence or absence of exudates, presence or absence of systemic or remote local manifestations during course of ocular inflammation. 3. Treatment; a selection of mydriatic; constitutional remedies; iridectomy. In the main, previous views were confirmed. In three of the nine, gonorrhea played an important part. The writer believed that gonorrheal iritis would be more often diagnosed if carefully looked for. Because of the time elapsing between the urethritis and the iritis, gonorrhea as a causative factor is overlooked and the iritis put down as rheumatic. Eyestrain was considered a cause in some cases. The gonorrheal cases did not have recurrence of the urethritis, nor rheumatic cases a return of the rheumatism. The rheumatic cases showed large amount of exudate; one gonorrheal case showed no exudate. Exudate seemed to depend more upon the intensity of the inflammation than upon the cause. Dietetics efficacious in the rheumatic cases perhaps, though the writer had not seen good results. Diaphoresis was a considerable benefit. Unless other evidence of rheumatism than the iritis, a generous diet was beneficial. Eupphthalmin sometimes substituted for atropin with good results.

Discussion.—Dr. C. J. Kipp, Newark, said it was in these cases that we get atropin poisoning, the repeated attacks rendering the conjunctiva susceptible. In most cases where the patient had been under observation for a long time there had been at some time necessity for stopping the atropin and resorting to other mydriatics.

Dr. S. D. Risley, Philadelphia, called attention to the fact that in these cases often the iris alone is not involved, but the entire uveal tract, so that the inflammation subsides slowly, often requiring many weeks and months before the uveal tract resumes a normal condition; these patients have relapses upon using the eyes when their condition is not such as to permit their use.

Dr. S. L. Zeigler, Philadelphia, in a great many of these cases, had been able to get them under control by nasal treatment, some absorption into the lymphatic chain from this region seeming to keep up the trouble.

Dr. Hiram Woods, Baltimore, in closing, said that the question often arose in these cases of when to stop the use of the atropin. In one case he had gotten excellent results by the substitution of euphthalmuin, as suggested by Dr. Knapp, in 10 per cent. solution. He thought that Dr. Risley's explanation of the recurrence being often due to use of the eyes while not in a condition for use was the proper one.

"Juvenile Glaucoma." Dr. R. Sattler, Cincinnati.

The paper consisted of the clinical study of two cases occurring at the ages of 11 and 17, together with a review of the pertinent facts known of glaucoma, occurring during the earlier or juvenile periods of life so far as clinical declaration, sex, and heredity were concerned. The second case was without any hereditary predisposition whatever. Occurred with acute attack of measles.

Discussion.—Dr. W. C. Posey, Philadelphia, spoke of the rarity of glaucoma in children and referred to one case in a boy of 13; tension markedly elevated, but no pathologic excavation; fields limited for form and color in both eyes.

Dr. Herbert Harlan, Baltimore, referred to a case which he had reported some time ago under the title of hereditary glaucoma. A girl of 17; defect followed back five generations; four or five cases of cousins and sisters in the same family. In this case double iridectomy was done; a few years later the same vision as at time of operation; has retained the same vision up to the present time. In another case operated upon the vision had been maintained, so that it seemed that the glaucomas in young children promised more than in senile glaucoma.

Dr. T. Y. Sutphen, Newark, thought heredity the most important causative factor. Recalled the case of a student where there was marked hereditary tendency; the mother and one or two of her brothers and sisters had been affected. A double iridectomy had been done early. No retrogression in over two years.

Dr. R. Sattler, Cincinnati, in closing, said that in the first case there was no hereditary predisposition, except in the mother. The case had been investigated thoroughly, the grandparents living in the city. In the other case there was absolutely no hereditary tendency.

"Cyanosis Retinæ." Dr. W. C. Posey, Philadelphia.

The writer said the first case had been presented by Dr. Knapp at Heidelberg, and described a case recently occurring in his own practice. The veins became enlarged and distorted and darker in color; the peripheral twigs distended; pulsation of vessels absent. There were fifteen cases besides the one reported by Dr. Knapp in the literature, to which the writer had added two others. He re-

ferred to the changes observed in the fundus in cases of congenital heart disease with general cyanosis and the value of ophthalmoscopic examination in this class of cases, both from a diagnostic and prophylactic standpoint.

"Acquired Cyst of Conjunctiva Containing an Embryonic Tooth-like Structure." Dr. E. Stieren, Pittsburg.

A case was reported by the writer of an acquired cyst of the conjunctiva containing an embryonic tooth-like structure, with exhibition of the specimen.

"A Case of Cystic Sarcoma of the Orbit—Extirpation—Death." Dr. H. F. Hansell, Philadelphia.

The tumor had its origin in trauma. Patient, a boy of 18, who at 5 had received a blow on the left side of the head. Family history good. The only flaw was death of three maternal uncles from tuberculosis. Mentally and physically undeveloped. A month after the injury the eye bulged forward and gradually a tumor appeared behind the ball, and the boy suffered more from inconvenience than pain. It attained an enormous size; base, $\frac{7}{8}$ in. in diameter, covered by conjunctiva. Removed without accident, the tumor being entirely encapsulated except at its posterior extremity, where there was a pedicle passing through the optic foramen. Convalescence was interrupted by erysipelas. Symptoms of meningitis developed, and the boy died.

Discussion.—Dr. R. Sattler, Cincinnati, had had a similar case some years ago, and asked if there was pulsation in this case in the beginning, to which Dr. Hansell replied that he had not seen the patient until he was 13. Dr. Sattler's patient was 13, and the beginning was attended by marked pulsation. Increase was rapid and it soon assumed the proportions described by Dr. Hansell. It was operated upon for excessive hemorrhage, which depleted the boy; had to be removed with thermocautery. Patient lived some weeks after operation and was more comfortable. Extended through the optic foramen to the brain and along the base of the brain.

"Certain Congenital Affections of the Eye, Coinciding with Strong Ante-natal Impressions Made on the Mother." Dr. H. Derby, Boston.

The author cited a number of coincidences of this kind, embracing various forms of congenital disease.

In the discussion Dr. Herman Knapp, New York, said that in 100,000 private patients he had never seen a case that would remotely strengthen such an hypothesis.

Dr. E. E. Holt, Portland, Me., reported a case of a boy, 12 years old, brought to him with no eyes. The mother informed him that

the child had been born without any eyeballs. Inquiry elicited the information that, when about 3 months pregnant, men were digging a cellar at the house and a little child came out on a pile of sand, and the workmen, not seeing it, threw a shovelful of earth in its face. The sight of this accident, the mother believed, was the cause of her child having been born without eyes.

Dr. Walter Pyle, Philadelphia, had examined nearly all the records of maternal impressions from the time of Hippocrates down and failed to find any scientific evidence at all.

Dr. Lucien Howe, Buffalo, thought the negative evidence which could be obtained by examining the pupils of blind asylums of importance. A repetition of changes would often be found in two or more of the same family. If due to maternal impressions, the mother would have to have had the same impression before the birth of each child.

"Lesions of the Fundus of the Eye Due to Potomac Poisoning." Dr. C. S. Bull, New York.

Lesions of the fundus, the writer said, were one of the rarest complications of auto-intoxication. Well-marked exudative choroiditis, involving the retina secondarily, the patches of exudation being large, flat and oval in shape and at first free from any pigimentary deposit, were described. There were three cases, in which the vision was at first seriously affected, but was finally restored to the normal standard. All three cases were accompanied by a marked general eruption of pemphigus. The first case was supposed to have been caused by eating croquettes containing tainted meat. Indistinct vision; cornea clear; pupils dilated; media clear; optic nerves pale; patches of yellowish white in the choroid. Iron, arsenic and strychnia cleared up these patches and the paralysis of accommodation disappeared. The second case due to poisoning by impure fish two months before having been seen by the writer. Complete paralysis of accommodation. Cornea clear, but striæ in both lenses. Patches of choroiditis varying in size and shape and with no pigimentary ring around the patches.

"The Treatment of Inoperable Cases of Malignant Diseases of the Orbit by the X-ray Method." Dr. C. S. Bull, New York.

The author thought the advantages claimed for the *x*-ray treatment appeared to be overestimated. In estimating results, he said, we must distinguish between carcinomatous and sarcomatous growths, for it is an established fact that the *x*-rays do exert a much more favorable effect on the former than on the latter.

Up to the present time we have not been able to measure with

any accuracy the activity of the radial energy coming from the tube, and hence can not determine the dosage.

Pain is always relieved by the *x*-ray treatment, and the more recent and superficial the malignant growth is the more rapid and favorable are the results of the treatment. The writer illustrated his paper by the report of ten cases.

Discussion.—Dr. Samuel Theobald, Baltimore, reported one case which he had recently seen; a young negro man of 20 or 25 years of age, with marked exophthalmos; not suffering pain; limitations of movement of the eye; neuroretinitis with engorgement of veins. Diagnosis of tumor made with skiagraph confirmed. Dr. Cushing of the Johns Hopkins decided that it was sarcoma and advised against operation. *X*-rays were tried, and the result of several weeks' treatment was that the exophthalmos disappeared and the man's condition greatly improved. He has gained seventeen or eighteen pounds in weight.

Dr. W. B. Marple, New York, had seen a case, last winter, of patient who had had a retrobulbar papilloma removed five or six years previously, and at the time had an epithelioma. Under *x*-ray treatment there has been decided improvement. Cocain was used and a speculum introduced to allow the rays better to reach the globe. A condition of the cornea resembling xerosis appeared, which seemed to be due to the cocain. The growth had been very materially lessened.

Dr. J. H. Claiborne, New York, seven or eight years ago, had seen a patient, in consultation, with epithelioma of right eye; it had affected both lids and a deep ulcer had formed on the canthus. She had 20/20 vision, so that a grave question arose. It was decided, however, after consultation, to remove the eye. The orbit was thoroughly scraped out. She remained all right for seven years, when she returned with epitheliomatous patches on the nose. She was then sent to the Skin and Cancer Hospital and the *x*-ray treatment instituted, with the result that the patches cleared up. He thought that in superficial epitheliomata the *x*-rays were preferable to the use of the knife.

Dr. E. E. Jack, Boston, said that surgeons of the Massachusetts General Hospital believed that many cases of sarcoma were made worse by *x*-ray treatment. He thought it useless in these cases.

Dr. O. F. Wadsworth, Boston, had seen benefit follow the treatment of superficial affections with the *x*-rays, but had not seen complete cure or continued immunity. He thought that where the case was operable the knife was preferable to the *x*-rays. It was less tedious and more certain.

Dr. D. Roy, Atlanta, thought an important point was to try the *x*-ray treatment before operative procedures, as where the *x*-rays were not used until after operation had been done the results were not so good.

Dr. Hiram Woods, Baltimore, referred to a case of an old gentleman of 74 with sarcoma of the conjunctiva, involving the inner canthus, where, after excision of all the cancerous tissue, the *x*-rays were employed with good results. He thought that, even after removal of all the growth that was operable, the prognosis would be better if the *x*-ray treatment were instituted at once.

Dr. Alexander Duane, New York, said, in treatment of carcinoma of the breast, the general treatment advised now was to continue the *x*-ray treatment after excision for several months, and the results had been very satisfactory.

Dr. C. S. Bull, New York, in closing, said he had had a double object in presenting the paper to the society: one was to emphasize, as far as possible, what are or what should be absolutely inoperable cases by the knife, and the other was to call attention to the absolutely unsatisfactory reports of the vast majority of these so-called *x*-ray treatments in malignant disease. Many of the stories sound like fairy tales, and there is no record given of the number of exposures, intervals between exposures, or change produced by a given exposure.

"Vernal Conjunctivitis in the Negro." Dr. Dunbar Roy, Atlanta.

Cases differed according to location and environment. The writer based his paper upon ten cases, all of bulbar form. Disease appeared with warm weather and subsided with cold. The cases were distinct from phlyctenular forms. The youngest patient was 3, the oldest 25; no difference in sex. Congestion of bulbar conjunctivæ; waxy-like ring around the cornea and extending over it for a considerable distance. The author also described in detail the histologic findings from particles excised.

Discussion.—Dr. Walter Pyle, Philadelphia, said that in his earlier career in Washington he had been impressed with the immunity of the negro from glaucoma and the frequency with which they had vernal conjunctivitis. He agreed with Dr. Roy that the disease was quite characteristic in the negro and said that Dr. Burnett used to make the diagnosis as the patient entered the room.

Dr. Herbert Harlan, Baltimore, concurred with both the gentlemen who had spoken. It was a comparatively common disease in Baltimore in the negro.

Dr. Emil Gruening, New York, thought the microscopic findings

in the cases had been very thoroughly reported; there was an unanimity of opinion now that the condition was due to increase of the elastic tissue of the conjunctiva. In the cases he had seen the lesion was certainly more limited to the upper lid than to the circumcorneal region. He referred to the use of Dunbar's pollantine and said that it was very efficacious in the relief of these conditions, though it had been put out for the treatment of hay fevers.

Dr. W. C. Posey, Philadelphia, was surprised that Dr. Roy had not found the elevations on the palpebral conjunctiva in his cases, as in his own observation he had found the characteristic whitish thickening of the conjunctiva in 70 per cent. of the cases. He had seen vernal conjunctivitis in the negro in its typical form. He referred to the use of the *x*-ray in the treatment of the condition and thought it might prove beneficial.

Dr. Samuel Theobald, Baltimore, desired to add his testimony is that of the other gentlemen as to the absence of the palpebral changes. He had never seen a typical case of palpebral vernal catarrh in the negro. It was true that some of the cases were not easily differentiated from phlyctenular conjunctivitis. In the treatment he had employed with good results a solution of bichlorid of mercury with sodium chlorid, using 1/60 grain of bichlorid and 3 to 5 grains of sodium chlorid to the ounce.

"Value of the So-called High-frequency Current in Certain Ocular Conditions, with Illustrative Cases (Preliminary Report)." Dr. J. C. Lester, Brooklyn.

The writer remarked upon the value of the high-frequency current in the treatment of vitreous opacities, in retinal hemorrhage, and in case of paralysis of the third and sixth nerve.

Discussion.—Dr. Emil Gruening, New York, was not convinced by these cases and said that in cases of ophthalmoplegia we know that recovery takes place with or without the high frequency treatment in many instances; that cases of vitreous opacities clear up also and vision returns. He did not think the conclusions, therefore, were correctly drawn.

"A Case of Discoloration of the Cornea by Blood Pigment and One of Hemorrhage into the Cornea." Dr. O. F. Wadsworth, Boston.

The first case of this kind had been reported by Baumgarten in 1883; five years later Lawford reported the second case; in 1893 Weeks reported a case. In all the cases there had been hemorrhage into the anterior chamber first.

The patient, a boy of 12, struck by a stick in the right eye; next day there was prolapse of the iris and some blood in the anterior

chamber. Several days the anterior chamber was full of blood. A few days later the cornea was darker and slightly greenish. After enucleation the cornea showed two opaque stars and between them an oval area stained yellowish brown: second case, while lifting a heavy weight, noticed that things appeared red to him in one eye. Hemorrhage into the cornea was evident a few days later. Microscopic examination showed central portion of the cornea contained considerable areas of hemorrhage.

"A Case of Homonymous Left-sided, Inferior Tetartanopsia Following Toxic Dose of Salicylate of Soda." Dr. J. H. Claiborne, New York.

The author reviewed the literature bearing on amblyopia following toxic doses of salicylate of soda and reported a case. In the left eye there was absolute scotoma of triangular shape. Vision from the base of the triangle out to the periphery. Field for red showed contraction, more on the nasal side. Field for green also contracted. Champagne spree was a contributory cause in this case. The color defects were described and charts of the field distributed.

"A Case of Epithelial Corneal Cyst, with Microscopic and Macroscopic Specimens." Dr. J. H. Claiborne.

The patient, a boy, was struck in the eye with a jackstone, which was followed by a cystic tumor on the cornea, of which the writer gave a detailed pathologic description.

"Photophobia." Dr. Percy Friedenbergl, New York.

The term photophobia was loosely applied, the author said, to two different conditions—the fear of light entering the eye, the dazzling often amounting to real pain when the unprepared eye is exposed to bright light, and the intense pain associated with blepharospasm and lacerimation in superficial affections or injuries of the cornea, which is called photophobia, but is not fear of light, but fear of and attempt to escape from all external agencies (light, air and contact with foreign bodies).

"A New Test Type Case." Dr. C. H. Williams, Boston.

Dr. Williams demonstrated an arrangement for illuminating a card of test letters and for rapidly changing the series by means of strings. The letters followed Green's arrangement of test types in geometrical progression.

Notes and News.

DR. JOHN O. McREYNOLDS and family of Dallas, Texas have returned from a trip to Europe.

Dr. E. E. Jack, Boston, said that surgeons of the Massachusetts General Hospital believed that many cases of sarcoma were made worse by x-ray treatment. He thought it useless in these cases.

THE letter appearing in the May number of the OPTHALMIC RECORD, entitled, "Why Straddle the Fence?" was by mistake credited to Dr. H. V. Würdemann instead of Dr. William H. Dudley of Easton, Pa.

THE following have been elected as the ophthalmic and aural surgeons of the Mercy Hospital, Denver: Active, Drs. John Chase, D. H. Coover, F. A. Davis, W. L. Hess, G. F. Libby and E. W. Stevens; consulting, Drs. J. M. Foster and Edward Jackson.

AT THE April meeting of the Colorado Ophthalmological Society the following officers were elected: Secretary, Dr. George F. Libby, Denver; treasurer, Dr. Melville Black, Denver; executive committee, Dr. E. M. Marbourg, Pueblo, chairman; Drs. Libby and Black, Denver. The member at whose office the meeting occurs, in rotation, acts as presiding officer.

RUBEOLA AND CHOROIDITIS.—C. Drew, Jacksonville, Fla. (*Journal A. M. A.*, June 3), reports a case of choroiditis causing blindness, following rubeola, one out of a number of similar cases that have come under his observation. In view of these facts, he holds that, until we have some satisfactory means for preventing such accidents, it is desirable that rubeola be placed on the list of dangerous and destructive diseases, with the same quarantine regulations applied to it as to scarlatina, diphtheria, etc.

PENNSYLVANIA OSTEOPATH BILL.—A committee, consisting of Drs. L. Webster Fox, chairman; Alfred Stengel, H. A. Hare, Henry

Beates, Chas. H. Frazier, James M. Anders, and J. Madison Taylor, representing the Philadelphia County Medical Society, were important factors in defeating the Osteopathic Bill, which was vetoed by the Governor of Pennsylvania. Said committee recommended that the society have a standing committee on medical legislation to look after all similar matters affecting the profession.

THE LARGEST MAGNET FOR SURGICAL PURPOSES.—A writer to the *Scientific American* claims to have constructed, under the direction of a physician connected with the medical staff of the Bridgeport (Conn.) General Hospital, the largest magnet for surgical purposes that has as yet been built. The iron core of the magnet is $4\frac{1}{2}$ feet in diameter. It is bolted to a base of oak, and its upper part is tapered so as to enable the oculist to conveniently observe the patient's eye with an ophthalmoscope. The magnet requires 30 amperes at 110 volts to completely saturate the core, which is wound in two halves with 235 pounds of No. 7 B. and S. gauge copper wire wrapped with a special insulation of cartridge paper in place of the usual cotton thread. The magnet is particularly useful in diagnosing cases in which a piece of metal is thought to have become lodged in the eye, but in which the oculist is not sure of it. By placing the eye of the patient above the magnet, as shown, and sending a small current through its coils the presence of a piece of steel will be immediately felt by the patient, because of the magnet's attraction for the steel. The magnet may be used in surgery in the same way. If a piece of steel or iron has been driven into any part of the body, its location may be determined at once by simply approaching the magnetic field. Further, if the wound is recent, the piece of metal immediately returns by the same course it entered without any surgical interference.—*Amer. Med.*

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, JULY, 1905. VOL. XIV. NO. 7. NEW SERIES

Original Articles.

CONCERNING MELANOMA OF THE CHOROID. WITH THE REPORT OF ONE CASE OF THIS CHARACTER AND OF A PIGMENTED SARCOMA OF THE CHOROID EARLY IN ITS DEVELOPMENT.

G. E. DE SCHWEINITZ, A.M., M.D.

AND

E. A. SHUMWAY, M. D.

PHILADELPHIA.

(Illustrated.)

That sarcoma may develop from pigmented nevi in various parts of the body is well known, and is a subject which has attracted considerable attention and created much discussion. The origin of malignant tumor formations in the skin from points where nevi had previously existed was first pointed out by Virchow.¹ Unna, Kromayer and others believe that these growths arise from cells which are derivatives of the surface epithelium, but other pathologists regard them as connective tissue growths. Ziegler believing that they are the result of proliferation of the endothelial cells of the lymph vessels, which have the property of producing pigment.

In the conjunctiva the same conditions are found, and many cases are now on record in which sarcomas have developed from pigment spots, usually on the eyeball, and more rarely on the eyelids. These growths are usually alveolar in type, and have been considered by Panas, Leber and others to be carcinomatous rather than sarcomatous. Wintersteiner, on the other hand, in a paper before the Heidelberg Society,² showed that most of the cases arose as the result of frequent slight traumatisms, from previously exist-

Read at the Meeting of the American Ophthalmological Society, Boston, May, 1905.

1. *Onkologia*, vol. ii, pp. 122, 234, 272.

2. *Bericht der Ophth. Gesellschaft, Heidelberg, 1898.*

ing melanomas, and with Greeff, Ginsberg and others, considers them sarcomatous.

Furthermore, it has long been well known that sarcomas of the iris likewise arise from melanotic spots in the iris stroma. Hirschberg,³ in a paper on this subject, reported three cases out of sixteen, in which pigment spots had existed before the growths developed, and more recently Wood and Pusey,⁴ in their exhaustive article on primary sarcoma of the iris, record ten cases out of eighty-six in which a pigment spot had been present, and seventeen others in which a dark spot had existed for varying periods of time before the sarcoma appeared. A similar origin of sarcomas of the ciliary body is recognized.

Several cases have been described in which sarcoma of the choroid has been found in association with congenital pigment spots elsewhere. Hulke⁵ was the first to report a case of this character in a woman 62 years old, who had congenital pigment spots in the eyebrow, lids and sclera. Hirschberg⁶ records two cases. One of his patients was a woman, 34 years old, who had pigment spots in the sclera and one dark-colored iris, the iris on the opposite side being greenish-brown. In another patient, a woman 56 years old, the iris was dark brown (on the other side greenish-gray), and there were pigmented spots in the sclera. In this case an anatomical examination of the eyeball was made, and revealed a partly pigmented growth in the choroid.

Martens⁷ records the following case: In a girl of 13 years there were several small nevi in the face, large grayish-black pigment spots in the sclera, reaching back of the equator, and dark brown pigmentation of the lower part of the iris. All of these conditions had been present since birth. On examination of the enucleated eyeball, a marked proliferation of the pigment cells was found at the position of the dark spot in the iris, and there was a large pigmented tumor in the choroid near the nerve entrance.

Pigmented nevi have also been found in the choroid in a few instances. Purtscher⁸ found a marked thickening of the choroid, constituting a tumor, composed purely of chromatophores, in connection with other areas which represented nevi.

Fuchs⁹ exhibited sections of an eye before the Heidelberg Con-

3. *Archiv. f. Ophth.*, xxix, 2, p. 1.

4. *Archives of Ophthalmology*, xxxi, 1902, p. 323; and *Archiv. f. Augenheilk.*, xlvii, 1903, p. 97.

5. *Ophthalmic Hospital Reports*, iii, 1860.

6. *Archiv. f. Ophth.*, xxix.

7. *Virchow's Archiv.*, vol. cxxxviii, p. 111.

8. *Arch. f. Ophth.*, 1, 1900.

9. *Bericht der Ophth. Gesellschaft, Heidelberg, 1900.*

gress in 1900 which showed collections of closely massed pigmented spindle cells in the macular region, which were grouped around the blood vessels, chiefly in the layer of larger vessels. The chorio-capillaris and retinal pigment cells were undisturbed, and Fuchs said of the condition: "Whether a sarcoma would have developed upon the site of these pigmented areas had the patient lived longer, we can not know positively. We can only say that their appearance is exactly similar to that of a spindle-celled sarcoma." In the discussion of Fuchs' paper, Wintersteiner remarked that he had found similar growths in two eyes during pathological examination. In one case there was a melano-sarcoma, and in the other a leuco-sarcoma, both arising in the layer of larger vessels, and invading the chorio-capillaris very slightly. Their greatest diameter was 4 to 5 mm. and their thickness hardly 0.5 mm. Further details were not given, but in a private communication to Derby, who has recently¹⁰ reported a case of sarcoma of the ciliary body at a very early stage, Wintersteiner says that he expects to record them in full.

Considering the rarity of these findings it has seemed worth while to describe the following cases, one of which represents a pigmented nevus or melanoma of the choroid, and the other a commencing pigmented sarcoma at a very early period in its development.

CASE 1.—Fibro-sarcoma of the inferior and superior parietal convolutions; optic neuritis; melanoma (pigmented nevus) of the left choroid.

History.—The patient, a colored woman, aged 32, a laundress by occupation, was admitted to the Philadelphia Hospital, October 11, 1901. Her family history was good, and no certain history of syphilis was obtained, although the infection seemed probable from some of the patient's statements.

Some months previous to her admission to the hospital, but exactly when she could not accurately determine, she began to lose power in her right leg. About the same time, or just previous to the impairment in her right leg, she began to suffer with headache, which gradually became more frequent and persistent. She stated that she became temporarily blind during the paroxysms of severe headache. The headaches at first would sometimes last half a day, at others for several days. The loss of power in the right leg increased, and during the month previous to her admission the right arm also became paretic.

She was first examined by one of the internes a day or two after

10. *Klinische Monatsblätter f. Augenheilk., Beilageheft, 1903, p. 123.*

admission. She was at that time well nourished. She complained bitterly of headache and evidently suffered greatly. Her tongue was slightly coated and moist; her pulse was full, strong and regular. Examination of the chest and abdomen resulted negatively.

The right side of the face was paretic. Speech seemed a little slow at times, but all forms of aphasia were absent. Loss of power was marked both in the right leg and right arm, but more complete in the leg than in the arm. Knee-jerk was exaggerated on the right and about normal on the left. Patellar clonus was present on the right and absent on the left. Ankle clonus was absent, as was also the Babinski reflex, on both sides. No impairment of sensation was noted at the time of the first examination, but a careful examination for sensation was not then made. The right leg showed spasticity and tremor and the right arm was spastic at the elbow.

The conditions at the time of the first examinations of the patient by Dr. Mills (about October 18, 1901) were as follows: The right side of the face was paretic; paralysis was marked in both leg and arm, but was more complete in the leg. The only movement retained in the lower extremity was partial flexion of the thigh on the pelvis. Sensation to touch and pain was nearly lost in the right upper extremity; it was but slightly impaired in the lower extremity. Impairment of muscular sense was also a marked feature. Astereognosis was present and became more and more positive as the condition progressed to its termination. All forms of cutaneous sensibility and muscular sensibility were tested by the usual methods, with the result of showing impairment, which as time passed became more and more complete, in the upper extremity. The so-called senses of locality, position, pressure and spacing were found wanting. In the right lower extremity the quadriceps jerk and knee jerk were exaggerated, and patellar clonus was marked. The front tap phenomenon was present. Ankle clonus, however, was absent, this absence being unusual in cases in which patellar clonus and front tap are present. The muscle and tendon jerks in the upper extremity of the right side were increased; on the left side, both in the lower and upper extremities, they were about normal.¹¹

On October 23, 1901, the patient's eyes were examined by Dr. de Schweinitz, who made the following report: The external aspect of the eyes is normal; the visual acuity of each eye, without correction, equals $5/25$. The pupils are round, equal in size, and their reactions are normal in all respects. There is no difference in the

11. This history is quoted from Dr. C. K. Mills's report of these cases, *Philadelphia Medical Journal*, Feb. 8, 1902.



Fig. 1. Melanoma of Choroid.

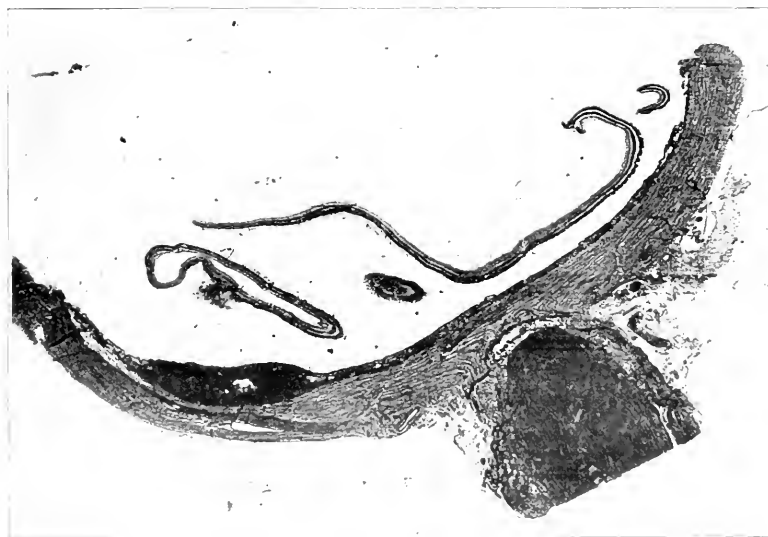


Fig. 3. Case II. Choroidal sarcoma in very early stage.
Low power.

width of the palpebral fissures, the levators have full power, and the rotation of the eyeballs is unimpaired in all directions. Although there is a history of diplopia, it is not possible to demonstrate double vision by the usual methods, nor does any examination reveal paresis of any external ocular muscle. With the ophthalmoscope the following conditions are evident: Marked bilateral optic neuritis (choked disc), the swelling of the nerve-heads approximating 3 mm., their apices being reddish-white in color, and gradually passing into a grayish tint. Upon the swollen papillae and in their immediate neighborhood are numerous flame-shaped, fresh hemorrhages. The arteries are about normal in size; the veins are very dark in color and exceedingly tortuous. In the macular region are areas of yellowish-white infiltration somewhat similar to lesions found in renal retinitis. Examination of the visual field reveals typical right homonymous hemianopsia, the dividing line passing around the fixing point and leaving it within the region of preserved vision. The preserved half fields are of normal size. It was not possible to obtain a satisfactory color field.

A tumor was diagnosed from the general symptoms, and owing to the combination of motor paralysis with impairment of cutaneous sensation, astereognosis and hemianopsia, the diagnosis was made of a dense tumor of large size, probably in the main subcortical, situated chiefly in the parietal region, possibly invading the motor region, and extending to or compressing the posterior limb of the internal capsule and the optic radiations where they approach one another in the region of the basal ganglia.

An operation designed to expose the growth was performed by Dr. W. J. Hearn and Dr. J. Chalmers Da Costa, and the larger part of the tumor was removed. The patient died, and at the autopsy the following conditions were found: Calcareous endocarditis; chronic interstitial nephritis; and congestion and emphysema of the lungs. This tumor chiefly involved the white matter of the superior and inferior parietal convolutions and the middle portion of the post-central convolution. It proved to be a fibrosarcoma.

The posterior half of each eyeball was removed, and after hardening in formalin submitted to examination.

Microscopical Examination.—The posterior half of the left eye was imbedded in celloidin and cut in serial sections, parallel to the long axis of the nerve. There is a high-grade swelling of the nerve-head, the top of the elevation reaching a height of 1.25 mm. above the level of the scleral ring. There is a slight round-cell infiltration about the central vessels and a decided proliferation

of the connective tissue cells along the pial septa. The fibers of the nerve are widely spaced one from the other, but the intervaginal space is not widened. The retina is detached (probably as the result of manipulations in removing the posterior half of the eye); it is edematous and exhibits moderate postmortem changes.

The choroid is very densely pigmented throughout, the cells being almost solid, with very black pigment, which conceals thin nuclei. This pigmentation spreads into the sclera in the inner layers, and particularly along the blood vessels and the sheaths of the perforating nerve trunks.

At one point, 3 mm. from the nerve entrance, there is a special thickening of the choroid, which is plainly visible to the naked eye. Measured carefully with a micrometer eyepiece, its long diameter is 1.2 mm. and its greatest width 0.5 mm. (Fig. 1.) There is no evidence of any inflammatory reaction at this point.

The retina is not attached, there are only a few leucocytes in the vessels of the area and in its vicinity, and the retinal pigment layer, which has remained adherent over it, shows no decided changes, although there is a slight increase in the pigment. The thickening of the choroid is made up of closely massed pigment cells, of the usual type of the choroidal stroma cells. Some of them are slender spindle cells with long processes; others are round and oval forms, with short processes, and there are a number of very large round bodies, likewise densely pigmented, which show no processes. In addition to these cell forms pigment is scattered in irregular clumps in the tissue between the unpigmented cells which make up the rest of the mass. The blood vessels are distended, contain a moderate number of leucocytes, and exhibit a decided swelling of their endothelium, but there is no evidence of perivascular new formation.

The use of the ferrocyamid-hydrochloric acid test for iron revealed an interesting condition. The majority of the cells did not stain, but at each end of the growth in exactly the same position in several sections thus treated, a group of the pigmented cells stained a deep blue color where they tapered off into the normal choroid. At one point there were two large blood vessels in their vicinity, as will be noted in the colored sketch by Mrs. Chase (Fig. 2). The blueing can also be seen between the cells, as then there was iron in solution in the tissue, which was being absorbed by the cells.

In the absence of evidences of inflammation, past or present, it seems proper to consider this choroidal thickening as a *melanoma of the choroid*, in an eye with great increase of the pigment throughout the uveal tract as far as the sections reach.

CASE 2.—Endothelioma of the dura mater; optic neuritis; melanosis of the choroid at a very early stage of its development.

History.—J. T., white, aged 47, was admitted to the Polyclinic Hospital in Philadelphia, on April 12, 1899, in the service of Drs. William G. Spiller and Max J. Stern, at which time the following history was elicited:

Sixteen years before admission the patient struck his head against a joist, producing an injury of the left fronto-parietal region. This was followed by occasional attacks of dizziness, but no headache or other sequelæ. In 1891 enlargement of the affected area in the head was noticed, which gradually increased. Three years before he came to the hospital he began to have weakness in the right leg, which gradually became more pronounced, but was not accompanied with sensory disturbances. He stopped work in February, 1898, at which time he noticed commencing aphasia, trouble in starting urination, and failure of vision. Seven weeks before examination there was a general epileptiform convulsion, which lasted fifteen to twenty minutes, and three weeks later severe occipital headaches made their appearance, which became progressively more severe and were occasionally associated with nausea. With these symptoms there was also marked loss of memory.

At the time of admission the records state that ophthalmoscopic examination showed bilateral optic neuritis, with secondary atrophy; the fields of vision were contracted, both for form and color. No mention is made of any growth within the eyeball.

On April 15, 1899, a craniotomy was performed by Dr. Stern, a large flap of thickened bone being elevated. A large inoperable tumor was found, and no attempt was made to remove it. Death occurred three hours after the operation.

At the autopsy permission was obtained to examine only the head. A large depressed area was found in the skull, with exostoses on the inner surface of the bone, and a large tumor of the dura mater, which measured 4 by 5 cm. antero-posteriorly, and dipped downward a distance of 2 cm. into the left hemisphere, situated just in front of the Rolandic fissure. The growth proved to be an endothelioma of the dura mater.¹²

Microscopic Examination.—At the time of autopsy the posterior half of the left eye was removed and given to Dr. Shumway for investigation. It was placed in Müller-formol, imbedded in celloidin and cut in serial sections. Microscopic examination of these

12. The case was reported in detail with the pathological findings by Drs. Spiller, Stern and Kirkbride in 1899, at a meeting of the Pathological Society of Philadelphia. From their account the history just recorded has been obtained.

sections shows an elevation of the optic nerve-head to a level 1 mm. above the choroid, swelling of its fibers, and separation of the individual fibers as the result of a pre-existing edema. There is also a moderate cellular infiltration along the lines of the pial septa. The retina shows swelling and edema of the nerve-fiber layer, with hypertrophy of Müller's fibers, and irregular elevations on the posterior surface.

The choroid is quite deeply pigmented throughout, this pigmentation extending also to the inner layers of the sclera. At a point 5 mm. from the center of the optic nerve, there is a pigmented thickening of the choroid which is visible to the naked eye, and was noted while the sections were being cut. This area measures 4.4 mm. in its antero-posterior diameter, and 0.9 mm. in thickness (Fig. 3).

Microscopically, thin sections show that this growth or thickening may be divided into two portions, a more densely pigmented part on the inner surface toward the retina, and a lighter part toward the sclera. It is situated in the layer of large vessels, the chorio-capillaris being practically uninvaded. The pigmented portion is composed of closely packed pigmented cells, some of which are of the type of the ordinary stellate stroma cells of the choroid, with long pigmented processes, while others are large round cells without processes, which are so densely pigmented that the nuclei are rarely visible. The outer portion is made up chiefly of spindle cells, without processes, which contain no pigment. These are proliferating between the vessels, and displace the stroma of the choroid. Between them there is a considerable amount of pigment, in the form of light yellow clumps free in the tissue. These spindle cells, compared with the cells of the growth from the dura, are seen to be very similar in size and form, but they do not group themselves together in whorls, and do not show any definite relations with the blood vessels, as do those in the brain tumor. There is a moderate leucocytosis in the vessels of the chorio-capillaris, and at the margin of the growth. In the center of one of the sections is a large open space, filled with round and oval cells that vary in diameter from that of a white blood-corpuscle to four or five times this size, which are densely crowded with pigment. With them there are a few leucocytes. Whether they represent wandering cells which have taken up pigment, or are degenerated chromatophores has never been settled. In this growth they appear to be in a large lymph space, they are not associated with red corpuscles, and do not give an iron reaction.

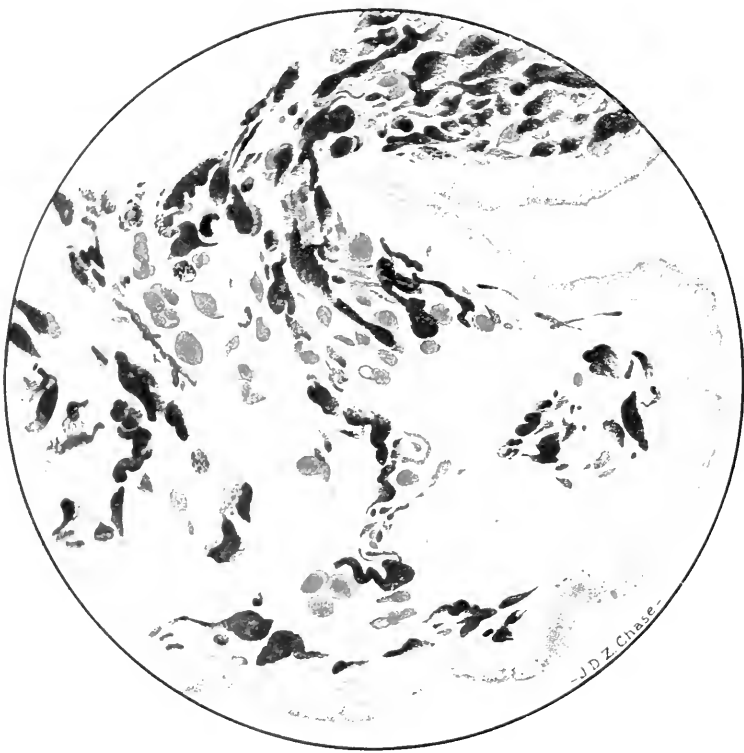


Fig. 2. Melanoma of choroid showing iron reaction in some of the cells.



Fig. 4. Case II. Periphery of choroidal growth, showing iron reaction in some of the cells.

The retina is detached, but this probably occurred in removing the half of the eye, as there is no evidence of the existence of a subretinal exudate. The pigment cells of the retina remain attached to the choroid. They show degenerative changes, and are interrupted in several places by homogeneous hyaline excrescences, which stain bright pink with eosin.

At the periphery of the growth, at each end, there are a few pigmented cells which give a decided iron reaction (Fig. 4), but nowhere else in the growth do any of the cells take the characteristic blue stain.

This growth, therefore, should be classified as melanotic sarcoma of the choroid in the very earliest stage of its development.

REMARKS.

Most of the choroidal sarcomas which have been described in literature have been much larger.

The possible connection of this growth with the brain tumor represents an interesting question. If one is to be considered a metastasis from the other, the dural tumor must have been the original growth, on account of its size and long duration and the fact that it is non-pigmented. It is conceivable that a metastasis from this neoplasm might have settled in the choroid only if it is assumed that the cells first entered the general circulation, passed through the pulmonary vessels back to the heart, and then upward through the arterial channels to the eye. It is well known that such emboli are most apt to lodge in the lung. A general autopsy, which would have determined the existence of such metastatic growths unfortunately was not obtained. However, the necessarily round-about route of such a metastasis to the eye, the absence in the choroid of the typical cell-whorls found in the dural tumor, and the marked participation of the choroidal chromatophores in the growth, strongly indicate that the choroidal tumor should be regarded as an independent one.

The two cases have in common the marked pigmentation of the choroid and of the inner layers of the sclera. The first case was a negro, hence this pigmentation of the uveal tract need not be considered to have been excessive, inasmuch as in the eyes of colored persons pigment spots in the conjunctiva and sclera are often observed and sections usually reveal a large amount of pigment between the muscle bundles of the ciliary body and in the choroid, although no reference to such a condition is found in the ordinary text-books of ophthalmology. The second case, however, was a

white man, and the pigmentation is therefore much more noticeable.

In the first case there was a typical melanoma, in the second a beginning melano-sarcoma of the choroid. Ginsberg¹³ pointed out the connection between sarcoma of the choroid and melanoma, and refers to the cases of Purtscher, Fuchs and Wintersteiner. Our cases constitute a confirmation of their observations. Martens (partly quoting Hirschberg), also maintains that marked diffuse pigmentation of the uveal tract represents a fetal malformation, like nevus pigmentosus of the skin, which predisposes the eye to the development of a malignant growth. That in these persons the more pigmented eye is always the seat of the growth was very evident in his case, in which an alveolar sarcoma developed in a child of 13 years, whereas sarcomas appear on an average at the age of 43 years. Naturally this cause can not be assumed for all cases, but must be considered as a factor in some of them, just as sarcoma develops from the pigmented nevi of the skin.

Another interesting point in connection with the growths is the fact that in each case the chorio-capillaris is not invaded and takes no part in the formation of the thickening. The starting point of choroidal sarcomas has long been a mooted point. Briere thought that leuco-sarcomas arose from the chorio-capillaries, while melano-sarcomas arose from the deeper layers. Fuchs,¹⁴ on the other hand, states that both pigmented and unpigmented sarcomas arise from the deeper layers, and this theory was held until Shieck's¹⁵ papers proved that they may arise both from the chorio-capillaris and the layers of larger vessels. In the first instance the tumors are usually unpigmented, and in the parts at least arising from the chorio-capillaris, they assume an angio-sarcomatous type. Our cases, therefore, conform to the rule that the starting point of the melanotic growths is in the layer of large vessels.

A further suggestive point in the anatomical investigation is the *positive iron reaction*, shown by the cells of the growths. As already described, this reaction is present in exactly the same position in the sections from both cases, in the extreme periphery, at points where the cells are developing most rapidly, and, at least in the second case, where they are invading the normal choroid. The question of the origin of the pigment in the melanotic growths

13. Grundriss der pathologischen Histologie des Auges, 1903, p. 281.

14. Das Sarkom des Uvealtractus, Vienna, 1882.

15. Ueber die Ursprungsst tte und Pigmentierung der Choroidealsarcome. v. Graefe's Archiv f. Ophth., vol. 45, p. 433, and Ein Weiterer Beitrag zu den Leucosarcomen der Chorio-capillaris. v. Graefe's Archiv. f. Ophth., vol. 48, p. 320.

of the choroid is one which has been discussed on many occasions, and it is not our purpose at this time to make an exhaustive study of the various theories which have been propounded. But it would seem that in early cases the conditions found must bear considerable weight, especially as to the formation of the pigment from the blood. This staining of some of the cells of choroidal sarcomas has been thought by some investigators to indicate that their pigment was formed from the hemoglobin of the blood, which at certain stages of the pigment formation gives the iron reaction. Pilibert, Schieck, and others believe, however, that these cells have fully formed pigment and that they absorb the iron when away from their mother-soil (*Mutterboden*), and especially in the neighborhood of blood vessels or hemorrhages, and that they are really degenerated cells. That this is true in the case of the large, densely pigmented cells in or near blood vessels, which often give the iron reaction, may be admitted, just as the pigment cells of the retinal pigment layer absorb iron in the presence of hemorrhages or of foreign bodies in the eye. In our cases, however, the cells which stain correspond morphologically with the ordinary choroidal stroma cells. They are well-marked processes and are not swollen; there is, moreover, no trace of hemorrhage in the tissue, nor do the retinal pigment cells show any staining to indicate the existence of a hemorrhage in the past. On the other hand, the slight staining of the tissue between the cells would seem to indicate the presence of iron in solution at this position, and corroborate the suggestion made by Leber¹⁶ that in these tumors of the choroid a fluid exudate may surround the growths, which contains the iron, and is the source from which the cells obtain their pigment. Leber's position that the retinal pigment cells have a prominent part in the formation of choroidal sarcomas, however, is not confirmed by our cases, as they show no evidence of proliferation or tendency to invade the growth.

A CASE OF CYSTIC SARCOMA OF THE ORBIT: EXTIRPATION: DEATH.

HOWARD F. FANSELL, M.D.,
PHILADELPHIA.

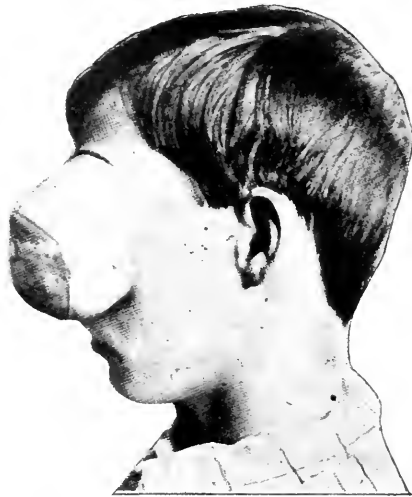
(Illustrated.)

Reports of orbital tumors have been so frequently presented before this society that I shall be brief in the verbal description of this new case. Moreover, the principal interest attaches to the

¹⁶ Ueber die Aderhautsarkome und die Herkunft ihres Pigmentes. Graefe's Arch. f. Ophthal., vol. xlv, p. 692.

photographs which graphically present the appearance and the enormous size reached by the growth, and to the microscopic report.

The tumor undoubtedly had its origin in traumatism, thus differing in its etiology from many other cases which resemble it clinically. The case is also interesting in that it is an illustration of the great size such growths may attain when not interfered with by the surgeon's knife. The patient was a boy of 18, who at 5 years of age had received a blow on the left side of the head. His family history is good, some of his forbears had attained to great age and none had suffered from malignant disease in any part of the body. The only exception in an otherwise clean family history is the death of three of his maternal uncles from tuberculosis.



1

Fig. 1.— Before operation—side view.

The patient had none of the usual diseases of childhood except measles. He had always been a frail, delicate lad, was uneducated and mentally and physically undeveloped. During the last ten years of his life his principal occupation was caring for his infirmity, which precluded him from associations outside of his own home.

The nature of the traumatism to the left side of his head is unknown, but it was not severe enough to deprive him of consciousness. One month after it had been received the left eye began to bulge forward and the sight to be impaired. Gradually a tumor appeared behind the ball, forcing it more and more into prominence. The boy suffered more from the inconvenience and

annoyance of the presence of the tumor than from pain during the thirteen years that had elapsed until I saw him, about January 1 of the present year. A tumor about the size of a man's fist protruded from the left orbit. Its roof, sides and floor were partly covered by the distended skin of the lids; its anterior face, 1 cm. in diameter, by the red, glistening and stretched conjunctiva. The only trace of the eye that could be found was a small gray round patch near the center of the anterior aspect under the conjunctiva that looked as though it might be the shrunken and opaque cornea. At this point during the operation was found an atrophied and compressed eyeball. The tumor was elastic and yielding to the touch in some places and in others it was hard and firm. It was not sensitive.



Fig. 2.—After operation—front view.

My colleagues, Dr. Hearn and J. Chalmers Da Costa, in consultation with Dr. Sweet and myself, decided that the growth was a cystic-sarcoma, and with a full understanding of the dangers of present operation and future recurrence on the part of the patient and his parents, advised removal.

On January 13, extirpation was performed without accident. A horizontal incision was made through the skin of the lids and conjunctiva, commencing at the external orbital margin and ending at the inner canthus. The lids and conjunctiva were dissected upwards and downwards, completely uncovering the tumor, which was then enucleated without further recourse to instruments. Hemorrhage was insignificant. The tumor was completely enveloped by capsule except at the orifice of the optic canal and sent

no prolongations into the accessory cavities. The proximal end consisted of a pedicle attached to some of the postorbital structures or to a part of the growth within the cranium. The periosteum of the orbit was intact and was not amalgamated with the capsule at any point. The orbital walls were thinned particularly at the anterior margin. The orbit itself was increased enormously in size, measuring in its horizontal diameter about 8 cm., or more than twice the normal.

After enucleation of the tumor the cavity of the orbit was packed with iodoform gauze, the lids trimmed and sutured, leaving sufficient room for drainage. Although the dressing was frequently changed and the orbit douched with antiseptics, pus collected in such quantities that the sutures were removed and the entire surface of the wound repeatedly cauterized with carbolic acid. Convalescence was seriously interrupted by a prolonged attack of erysipelas contracted from a sporadic case that developed in the wards. For many days the temperature varied from 103° to $104\frac{1}{2}^{\circ}$. Six weeks after operation the patient was sufficiently recovered to return to his home in Delaware. According to the report of Dr. James, who attended the boy at the latter's home, symptoms of meningitis appeared within a few days and in three weeks the boy died. No postmortem was obtained, but death was probably due to continued growth of the tumor within the cranium.

Report of Dr. W. M. L. Coplin, Professor of Pathology in the Jefferson Medical College:

January 13, 1905. Specimen consists of a large ovoid cyst-like mass of tissue weighing 315 grams. The antero-posterior diameter is 7.5 cm. and the supero-inferior diameter 6.4 cm. Posteriorly this mass tapers to a round pedicle 0.9 cm. in diameter, while the anterior end is rather blunt and capped by the walls of the collapsed eyeball, of which the cornea and anterior portion are cut away by a vertical incision which has permitted the vitreous humor to escape and exposed the dark retinal lining. Arising from the superior and externo-lateral surfaces of the eyeball and attached respectively, to the antero-superior and antero-external-lateral segments of the tumor by shreds of muscle and fascia are two bands of muscle 0.8 cm. in width. The symmetrical contour is slightly varied by two round prominences, one bulging from the antero-inferior segments of the ovoid mass and by numerous small hemispherical blebs varying in diameter from 2 to 4 mm. and protruding here and there over the surface of the mass. The mass itself is pliable and elastic to the touch, yet rather firm on deeper pressure.

The entire specimen was fixed for 48 hours in 10 per cent. solution of formalin. The tumor was then incised, the line of incision passing from above downwards in the antero-posterior diameter a little to the mesial side of the eyeball on the anterior aspect and of the pedicle at the posterior extremity. On incision 155 c.c. of reddish-brown fluid issued from the interior. The outer portion of the tumor proved to be one large cavity, which in the superior half extended from the external to the internal or mesial wall. The only solid portion of the tumor is a bar of tissue varying in width from 2 to 3 cm., and in depth from 3 to 4 cm., occupying the lower and internal aspect to the full length of the mass from the pedicle in the posterior to the eyeball in the front. This column of tissue presents a smooth, homogeneous, yellowish white, firm, yet elastic surface. Blocks of tissue taken from this column of solid tissue were fixed infiltrated, blocked out, mounted and stained according to approved laboratory methods.

Microscopically these sections are margined along one side by a border of lamellated, wavy fibrous connective tissue, which forms, as it were, a thick capsule. The fibrous tissue is non-nuclear, but here and there in gaps between the lamellæ are numerous nests of red blood cells. The remaining portion of the sections consists of a peculiar reticulum-like formation, of stellate cells with long branching and anastomosing filaments. These cells possess rather indistinct outlines and large round or oval nuclei, the perinuclear protoplasm appearing rather refractile and staining very indifferently. The anastomosing filaments or processes and their respective cells seem to form numerous, small, polyhedral alveoli which contain a refractile, poorly staining, homogeneous, intercellular or ground substance possessing in part the microchemic characters of mucin. In some areas this mucoid ground substance is replaced by a fibrous connective tissue, supplemented by a decided increase in the cellular elements. A few areas appear in which a homogeneous, poorly staining nondescript mass of tissue is surrounded by an enclosing band of wavy fibrous tissue containing oval nucleated cells which are most numerous along the inner border of this band. Here and there poorly formed blood vessels are present in cross and longitudinal section containing numerous erythrocytes.

Spreads made from the sediment obtained by centrifugalizing the fluid contents of the tumor contain numerous erythrocytes and a number of large peculiarly staining cells resembling in appearance those found and described above as present in the solid portions of the tumor.

Diagnosis: Cystic-sarcoma.

RECURRENT IRITIS—A STUDY OF NINE CASES.*

HIRAM WOODS, M.D.,

BALTIMORE, MD.

Text-books give comparatively little attention to recurrent iritis. Reasons are apparent. Diagnostic symptoms of recurring and primary attacks are the same, and so is the treatment. So far as I know, there is no reliable method of preventing recurrences. Consequently, after the etiology, symptoms and treatment of the various forms of the primary affection have been described, there is little for an author to say beyond stating what forms are prone to have recurrence, and what influence, if any, such local abnormalities as posterior synechiae, persistent deposits on the posterior corneal surface, etc., may have in increasing the danger of recurrence. Brief quotations from standard works will suffice to show accepted professional opinion regarding this disease in its most important features. Causes are, in the main, constitutional. De Schweinitz says that recurrences are uncommon in syphilitic iritis and that the exudate is usually abundant. The opposite is true, in both respects, of the rheumatic and gouty forms. Iritis may be the *earliest* manifestation of gout. Gonorrheal iritis, he thinks is more common than is usually supposed. It neither follows immediately upon urethritis, nor is coincident with it, an arthritis often intervening. It is attended with severe pain and may relapse with each attack of gonorrhea. He thinks there is no adequate proof that posterior synechiae can cause recurrence of iritis; that the "tendency of rheumatic iritis to recur requires preventive treatment in the forms of regulated diet, use of mineral waters, and proper attention to change of clothing according to the vicissitudes of the climate." Fuchs gives the same description. The small influence of posterior synechiae he illustrates by citing the immunity from recurrence if the adhesions have resulted from an iritis following corneal ulceration, and the tendency to recur if rheumatism, gout or syphilis caused the first attack. Iritis from these causes is apt to recur without synechiae. In rheumatic iritis recurrence often coincides with return of joint symptoms. He thinks that gonorrheal iritis does not usually come till *after* arthritic disturbance; that it is prone to recur and the occurrence is often associated with renewal of urethritis or joint trouble. While the above quotations represent teachings of the present day, one finds, in tracing back their gradual evolution, that mainly in three

* Read at the Forty-first Annual Meeting of the American Ophthalmological Society, held at Boston, Mass., May, 1905.

ways have views of the causation of recurrent iritis undergone change: 1. What was formerly put down as "idiopathic iritis," and even now must sometimes be so considered, is often an early manifestation of gout or rheumatism, maybe hereditary, constitutional symptoms appearing at a later time. 2. Gonorrhea has not received its due recognition as a cause. Explanation seems to be the arthritis which usually intervenes between the urethritis and iritis. This joint involvement is in most cases of gonorrheal origin susceptible of bacteriologic demonstration, and yet has been looked upon as essential rheumatism. Subsequent recurrences of iritis have then been called rheumatic. 3. Posterior synechie have been given undue importance. That they are a source of danger when the pupil is excluded or occluded is, of course, recognized now as it was formerly; but even so, as Swanzy and others pointed out years ago, their danger is not so much in the direction of recurrent iritis as of secondary glaucoma, destructive cyclitis, etc. Review of such works as old editions of Swanzy, Nettleship, Higgins, Soelburg-Wells, and even as far back as Dixon, William MacKenzie, and George Frick's English edition of Beer, bring out in a most interesting way the gradual development of our present definite view of iritis.

I have had under observation for a series of years several typical cases of recurrent iritis. While the clinical history of the cases is appended, I beg to call attention to some lessons which these histories teach. In the main, observations confirm prevailing views; in some details they do not.

1. Cause of original attack. In three cases of the nine it was acute inflammatory rheumatism (Cases 3, 7 and 9). One of these (3) contracted gonorrhea two years after his rheumatism and *before* his first recurrent iritis. In two cases (2 and 5) there was the classical order of gonorrhea, arthritis, limited to one joint—the ankle in one case, knee in the other—and iritis. In but one case (6) was the primary iritis syphilitic. In two (1 and 8) the assigned causes of the primary attack were glare from the water and "unknown." In the families of these patients there is history of gout or rheumatism, and I am more disposed to attribute the iritis to these hereditary tendencies than to the causes given. One of these patients (1) contracted gonorrhea with subsequent arthritis in one ankle before his first recurrence. The other (8) had one recurrence, in the eye first affected, after two years. Two years later she had her only attack of acute inflammatory rheumatism, and after another period of two years developed iritis in the other eye, which recurred in four months. The cause of the first attack

in the remaining case (4) is indeterminable. Twenty years, at least, before the iritis, he had had gonorrhea. He was positive he had had nothing after that attack. A few months after his first iritis he contracted syphilis. Prompt treatment was instituted, and the disease ran a mild course. In the eighteen years since this infection there has been no evidence of lues, unless, indeed, it be his recurring iritis. I am not disposed to accept as causes of his first iritis the old gonorrhea, or syphilis in the recurring attacks. The patient has always been a "high liver," and ocular gout seems the most probable explanation. He himself attributes recurrences to efforts to see; but of this I shall speak more fully in a moment. I do not find, in studying the *original* cause of the iritis, anything which differs from the usual teaching. There is, however, confirmation of the causative influence of gonorrhea. In three of the nine cases (1, 2, 5) and possibly two more (3 and 6), it played an important part. The characteristics of gonorrheal arthritis and the joint affections of articular rheumatism seem sufficiently distinctive to enable one to avoid an error in diagnosis. I believe if more pains were taken to avoid this error cases of "gonorrheal" iritis would be seen oftener. Study of the apparently *exciting* causes of recurrence affords considerable interest. In three cases the patient was only aware that he would go to bed comfortable and wake with severe pain, the eye would rapidly redden, and in a day, without previous warning, he was in an attack. These men (Cases 2, 6 and 5) presented as constitutional causes rheumatism, syphilis and gonorrhea. While the causes were different, the ocular condition was nearly identical. In two there was total exclusion of the pupil, and in the third extensive synechiæ. Of the other six, all assigned the same exciting cause of recurrence—effort to use the eyes for near or sustained work. In one case (8) I was unable to observe early changes, seeing the patient only twice, for a few days at a time, to advise on operative procedures; but in the other five I have been able to make repeated observations. One case (4) has defective visual acuity from secondary lens and vitreous cloudings. All the others have, with refraction correction, normal vision. These patients have sent for me or come to my office time and again with what they termed "flushings," which came after use of the eyes in reading, or at the theater. They were faint circumcorneal injections, and were observed after a paroxysm of pain, which the patient learned to recognize as indicative of trouble. The history of Cases 1 to 4 illustrate the experience. Frequently the injection disappeared in a day without treatment or after a single instillation of

atropin; but in every instance of recurrence of iritis in these patients pain and faint circumcorneal injection were the earliest symptoms, and followed eye tax. In Cases 1 and 4, where old adhesions existed, injection was first always *observed along the corneal margin adjacent to these synechia*. At first I instilled atropin as soon as this injection was observed. At other times, because the pupil was active, the cornea free from deposits on its posterior surface, and the patient unwilling to have atropin used until the diagnosis was reasonably sure, I refrained from its use. Often no harm was done by delay. But some of the worst attacks which Case 1 experienced began with two or three days of this slight redness without other symptoms than moderate pain. Then the pupil shut down in spite of all I could do.

Eye strain has been insisted upon as a possible cause of recurrent iritis, notably by the late Dr. Noyes. In one of my cases (4) there was secondary lens and vitreous clouding, reducing V. to 20/50, and in two others (7 and 8) permanent deposits on the posterior surface of the cornea, which did not lessen visual acuity. Myopic astigmatism against the rule, hypermetropic astigmatism .5 D. with rule, and hypermetropia 1.5 D., were associated refraction errors. Glasses improved vision somewhat, but did not lessen irritability on work. In the other three, however (1, 2 and 3) hypermetropic astigmatism with axes at 120° and 15°, mixed astigmatism, with rule, and 2 D. myopia were found, and correction has been of decided benefit. The patients are all engaged in active life, and report that removal of glasses soon brings the old sensations which they have learned to associate with beginning attacks.

The *course* of iritis in these cases has been in some respects atypical of usual descriptions. For instance, in none of them was there a return of constitutional or local evidence of the original cause of the eye lesion. The gonorrheal cases did not have urethritis, the rheumatic did not have rheumatism. Possibly an exception should be made in Case 1, who had acute tonsillitis during the seventh attack of right iritis and acute pharyngitis in the ninth. This patient's first attack I have attributed to hereditary tendency to rheumatism, while recurrences may have been attributable to gonorrheal infection, with arthritis, *after* the first iritis, or to whatever produced the first attack.

The behaviour of the exudates was somewhat different from that usually taught, in that it was abundant in rheumatic cases. Cases 3, 8 and 9 were certainly rheumatic. In Case 7, mild rheumatism occurring five years before outbreak of iritis was the only assign-

able cause. Case 1 was either rheumatic or gonorrheal. In all the exudate was abundant. In two cases (7 and 8) deposits on posterior surface of cornea seemed to be permanent. So far as I could judge the tendency to exudate depended not so much on the cause of the iritis as on the intensity of the congestion. Only one patient presented no exudate (Case 2). This was gonorrheal in origin.

The belief that each attack is less severe than its predecessor was, in a general way, confirmed; though Case 1 had his worst experience in the eighth attack in the right eye, with exudation and hemorrhage. Another confirmation was that *one* eye usually bears the brunt of the disease. But one eye was involved in three cases (6, 7 and 9). In Cases 1 and 3 the relation was, respectively, 11 to 2, and 3 to 1. In Cases 2 and 8 the two eyes were involved equally, while in 4 and 5, though figures were not obtainable, it was evident that one eye had been the greater sufferer.

Iridectomy was done four years ago during acute inflammation in Case 5, and to date there has been no relapse. Preventive iridectomy, between attacks, done for Case 4 by the late Dr. J. J. Chisolm, by myself for Case 9, were without avail. In both cases there was exclusion of the pupil.

In conclusion, I want to speak briefly of a few points in treatment. Dietetic regimen, mineral waters, etc., may be efficacious in preventing relapses in rheumatic cases; but I have not seen such results. My general rule is to refer such cases to their physician. Often they come back with printed slips of what they can and can not eat in gout or rheumatism. Such rules are observed until the next attack of iritis, and then they lose faith. Two of the men considered here had their worst attacks while strictly following prescribed regimen and refraining from wine, etc. After disgust at a relapse or two they took up their old life of moderate eating and drinking and had no greater trouble than before. Another case (7) was distinctly benefited when all rheumatic regulations were withdrawn and generous diet allowed. I incline to the opinion that unless there are other evidences of rheumatism and gout than the iritis affords, general supporting treatment is preferable to that directed to some dyscrasia of whose existence we are uncertain.

The repeated attacks of circumcorneal injection, near the synchial area, usually appearing after eye strain, and the frequency of this limited injection as the earliest symptom of a recurrent attack led me to use atropin as a prophylactic in two of the cases, 1 and 4. In the former I had to discontinue its use because the man was well and wanted to go to work; but while the pupil was

kept still he was free from trouble and had a relapse after its release. The other patient keeps his pupils constantly under weak atropin, one-half grain to ounce. He has only 20/50 vision, and adhesions along the lower border of the pupils, opposite Dr. Chisholm's iridectomies. He claims (and his claims seem to be just) that as long as he keeps the pupil quiet and does not use his eyes, he is free from trouble. Discontinue atropin or resume eye work and he has trouble. His last attack, in November, 1904, was the first for two years, and followed non-use of atropin for a few days, through mistaking a boric acid solution for atropin, and an evening of bridge-whist. Of course, it is easy to exaggerate the importance of such things as these; yet ocular irritation, of whatever kind, must be recognized as an aggravating cause in eyes predisposed to iridic inflammation. Pupillary reaction, pulling on synechiae, *may be* enough in certain cases to start hyperemia. Iridectomy will not stop this pulling, unless the synechiae are cut through, for the uncut sphincter contracts. Again, in the healing of an iridectomy new synechiae may form. Atropin prevents the pulling, and my cases, though small in number, seem to teach that there is some efficacy in preventing it. In Case 2 there was no exudate, yet the pupil remained only moderately dilated after free use of atropin, and suddenly and completely dilated after Jaborandi diaphoresis. In Case 1, there was the same pupillary condition, and the exudate was limited to a few spots on the posterior surface of the cornea. A large dose of salicylate of sodium was given, followed by sweating and depression. There was immediate dilatation. I am not enthusiastic enough to assert that diaphoresis was the effective agent in securing the mydriasis from atropin previously ineffectual; but I am of the opinion that this class of remedies has a place of some importance in the early stages of iridic congestion, which merits farther study.

Atropin was the only mydriatic used except in Case 1, where it caused severe ciliary pains. As narrated in the clinical record, euphthalmin was substituted with excellent results.

The general truths underlying the *recurrence* of iritis seem to be that a constitutional dyscrasia, as rheumatism or gonorrhea, is always present; that the exciting cause of a relapse is one or another of numerous irritants which can produce hyperemia; eye strain from effort to use an eye incapable of work from former disease, or refraction error; pulling on old synechiae by pupillary action; exposure to wind, dust, etc. The only prophylaxis against recurrence is to discover and, if possible, prevent, these exciting causes. If iridectomy, done for preventive purposes, has any

beneficial effect, it is due to what we indefinitely call "nutritive changes," and has no relation to old synechiæ unless the latter have caused ex- or occlusion of the pupil. The diagnostic use of weak atropin solution will show if synechiæ, *not* shutting off communication between the chambers, are a source of irritation. If the eye is found to be free from irritation while the pupil is kept quiet, the constant use of a weak mydriatic may be of benefit.

CASES.

CASE I.—Merchant, 24 years of age, first seen in July, 1892, suffering from his sixth attack of iritis; the first I had observed. His left eye was involved, though all his other attacks had occurred in the right eye. Iritis was of the ordinary plastic type and recovered, with free pupil and faint pigment deposits on capsule, after a month. I obtained the following history, which I believe is reliable. There is a family history of rheumatism and gout. His first attack of iritis occurred seven years before I saw him, at the age of 17. At that time the boy had had neither rheumatism nor gonorrhea, and the ocular disturbance was attributed to prolonged exposure to glare while on a yachting trip. A year after this attack he had acute rheumatism in one knee, probably following his first attack of gonorrhea. From his eighteenth to his twenty-first year there were several gonorrheal infections from which he seems to have recovered without trouble. He was under careful medical supervision and I am told by his physician that he never showed evidence of syphilis. After 1892 I did not see him for two years, when he came with plastic iritis in the right eye, recovering after six weeks with two or three points of synechiæ in the lower and outer quadrant. Ten months later, in March, 1894, and again in February, 1895, he presented slight pericorneal injection, near the synechial area, with severe pain. Under mydriatics both symptoms disappeared. There were fine deposits on posterior corneal surface in each of these experiences. In August, 1896, the right eye went through its seventh attack of plastic iritis. After two years, in September, 1898, there was a repetition of the circumcorneal injection, fine corneal deposits, and pain in the right eye, all yielding to mydriasis. Six weeks later, however, he went to bed with the worst attack of iritis he has ever had. The right eye was again involved. From the beginning there was exudation into anterior chamber, followed on the fifth day by a hemorrhage nearly filling the chamber. Two days later, after a chill, and elevation of temperature, he developed double tonsillitis. He then remained well for twenty-two months, until August, 1900,

when there was a repetition of right circumcorneal injection, near synechial points. This lasted two days and was associated with fine deposits on posterior surface of cornea. In November, 1901, he experienced his ninth attack of right iritis, associated with acute pharyngitis. For the first time atropin increased his pain, and I was forced to substitute euphthalmin in 10 per cent. solution, used every two hours and with good results, the mydriasis, while not complete, being fairly well maintained. In May, 1903, there was repetition of the right pericorneal injection relieved by atropia. Reviewing his case at this time I found that during the eleven years he had been under my observation he had had but one attack of iritis in the left eye. This was in 1892, and the first I had observed. On the other hand, the right had been through four attacks of iritis, with abundant exudate and had experienced five brief but painful attacks of pericorneal congestion, specially marked near old synechiæ. The left pupil was free. I had often asked him to allow iridectomy in the right eye between attacks, being induced to give this advice by the apparent immunity of the left eye, with its *free* pupil, and the repeated disturbances in the right where the synechiæ existed. In the summer of 1903 he had concluded to accept this advice; but early in the fall he came with his eleventh attack of iritis; but it was the left eye which was affected. This attack, however, was mild, recovering with two or three points of unyielding synechiæ. Since the fall of 1903, although there are adhesions of each iris to the lens capsule, he has been free from trouble.

CASE 2.—Thirty years old, clerk, has consulted me frequently during the past four or five years for transient circumcorneal injection and pain in either eye. At these times a mydriatic, used for diagnostic purposes, has apparently removed all the symptoms. In November 1903, he consulted me with the same symptoms. Atropin produced only moderate but regular dilatation. The left eye was involved, while old capsular deposits in the right eye evidenced former iritis. The left was free from either corneal or capsular exudates. He was suffering moderate pain. Two days after I saw him I was taken sick and he came under the care of a medical friend. About the tenth day the eye was free from pain and congestion, pupil regular, but still incompletely dilated. Atropin was discontinued, and the man allowed to take a walk. The following day he was seized with violent pain, rapid contraction of the pupil, in spite of the prompt use of atropin, and deep circumcorneal injection. I resumed charge of the case at this time. Morphia was needed to secure rest. After three days' trial to

effect dilatation by strong atropin solutions, he was given a profuse sweat with jaborandi, repeated the next day. Whether *after* or *because*, I do not know; but the pupil, which had remained minute, dilated promptly and regularly, the capsule failing to show any point of former adhesions. He has normal vision in each eye by correction of his mixed astigmatism. The most interesting portion of the case is the history. When nineteen years of age, he contracted gonorrhea, which lasted two months. When recovering from this he was seized with rheumatism in the right ankle, complicated by right sciatica, which persisted several months after rheumatism had disappeared. For two years then he remained well. A second attack of gonorrhea was experienced between two and three years after the first. He was under treatment for this eighteen months. During the third month he had a spasmodic stricture. The first attack of iritis occurred soon after the occurrence of this stricture and involved the right eye, lasting about six weeks. His ocular troubles, then, have been an attack of iritis in each eye, eight years intervening between the two, numerous attacks of transient circumcorneal injection and pain. Rheumatism, confined to one joint, following gonorrhea, is the only assignable cause. Syphilis is definitely excluded. The first attack of iritis was evidently accompanied by exudates, the latter was not.

CASE 3.—Twenty-five years of age, lawyer. Acute rheumatism when 15 years of age, gonorrhea two years later, mild right iritis the year after acute rheumatism. Remained well for six years, when, in June, 1898, he consulted me with pain in the right eye, circumcorneal injection, deposits on posterior surface of cornea. Pupils were of equal size, responding promptly to light. As a safeguard, atropin was used, in spite of which the pupil contracted, with increased pain and lymph deposits on posterior surface of cornea and capsule of lens. Eye recovered after two weeks with normal vision by correction of myopia, two diopters. His third attack of right iritis (second under my care) occurred in November, 1900, and presented practically the same symptoms as those noted above. There was, however, persistent pain for several days after the pupil had become dilated. In June, 1901, I saw him for his fourth attack, which, however, involved the left eye. There was considerable exudate on capsule of lens, cornea, and into anterior chamber, which underwent slow absorption. Both eyes have recovered without synechie and with normal vision after correcting his myopia. He has had no attack of iritis for three years. Syphilis seems to be excluded.

CASE 4.—Retired merchant, 56 years old. First seen February, 1901, with iritis in left eye. He gave the following history: His first attack of iritis occurred in 1875 in the left eye. There was no cause that he could assign: had always before been in good health save for indefinite symptoms of gout. Eye trouble was attributed to exposure at races day before. He recovered completely in the course of two months, and early in 1876 contracted syphilis. In his early life, when a "youngster," as he expressed it, he had several attacks of gonorrhea. Shortly after contracting syphilis he developed rheumatic symptoms in his shoulders and back. He was confident, and I could find no reason to doubt his statement, that except for this gonorrhea, some twenty years or more before the iritis, there was no definite constitutional cause to produce eye inflammation. From 1876 until 1885 he went through "innumerable attacks" of iritis, always in the left eye. Then he had one severe attack in the right eye. The late Dr. Julian J. Chisolm iridectomized both eyes about the years 1886 and 1887 for exclusion of the pupils. In 1901, when he came under my care, both eyes presented large colobomata above, ring synechiae along lower pupillary margins, cloudy lenses, and vitreous opacities. No choroidal lesion could be found. Since then I have attended him in three moderately severe attacks of left iritis, associated with considerable exudate on posterior surface of cornea, lens capsule and once, into anterior chamber. The vision in 1891 was R. E. 20/50 by minus 1.00 D. S., c w minus 1.00 D. C., — 90°; L. E. 20/50 by same glass. Subsequent attacks have not lessened visual acuity. In addition to the three attacks of iritis which have come under my notice, there has been a number of "flushings," to use his own expression, several of which I have seen. They are marked by slight circumcorneal injection and some pain. He says he can always produce an attack of these flushings, which have been invariably the first symptom of recurring iritis, by reading, watching a theatrical performance, or making any effort to do eye work. He obtained a temporary respite from iritis after the iridectomies. Since he has been under my care mild atropin solution has been used constantly. He says that whenever he stops the atropin, flushings of both eyes and pain supervene. There has been no manifestation of syphilis since the early secondaries and the rheumatic symptoms in 1876. His physician says he was entirely cured, he believes. The points of interest in the case are, first, the appearance of iritis without constitutional cause—unless, indeed, a gonorrhea, cured twenty years before, could be so regarded; secondly, the contraction of lues after the iritis, thus introducing a

constitutional cause, which might produce subsequent attacks; third, the tendency to relapse in but one eye; fourth, the failure of iridectomy to stop these relapses.

CASE 5.—J. C., 32 years old, liveryman, was admitted to the wards of the Maryland University Hospital, in January 1901. He was recovering from an attack of gonorrhea, his third or fourth experience, and at time of admission had rheumatism of gonorrheal origin in right knee. He gave a history of having been through several attacks of severe eye inflammation during previous years. The first had followed his first infection from gonorrhea, and had preceded rheumatism. The left eye showed active plastic iritis with exclusion of the pupil. Pain was intense. On right capsule were a few pigment deposits from former attacks. After two weeks' treatment with salicylates, atropin, heat, etc., without result, I performed an iridectomy under chloroform. His recovery was prompt, and the eye was restored to normal vision in the course of a month. I next saw him in the fall of 1903 at the Presbyterian Hospital, with plastic iritis in the right eye, unassociated with rheumatic pain. He recovered without synechiæ. The left eye, which had been most frequently attacked before operation, has been free from trouble for nearly four years. There was neither history nor evidence of syphilis. I would call attention to the clearly defined order of events: Gonorrhea, and iritis some time before admission to the hospital; fresh gonorrhea, with demonstrated gonorrheal rheumatism, and iritis after admission; relief only after operation; and, finally, iritis in the *unoperated* eye, without return of urethral symptoms.

CASE 6.—P. F., 50 years old, was brought to me in March, 1895. The history was unsatisfactory, but it was evident that there had been a number of attacks of iritis, always in the right eye. The present attack had lasted six days, was accompanied by obstinate posterior synechiæ along superior pupillary margin, severe pain, deposits upon posterior surface of cornea. Pain was increased on touch. It was difficult to get a definite account of the cause of his first attack. The man had had both syphilis and gonorrhea, but no rheumatism. He did not remember whether or not gonorrhea had preceded his first eye attack, but was sure syphilis had. This attack was uneventful, the patient being well in two weeks, with the upper pupillary margin adherent to lens capsule. I next saw him in February, 1899. He had right iritis with streaky infiltration of cornea and exudate into anterior chamber. Under ordinary specific treatment he made a prompt recovery, all the synechiæ this time yielding to atropin. In November, 1902, I

attended him through his third attack of right iritis, and in May, 1904, during my absence from the city, my assistant, Dr. Davis, treated him again. After his recovery in 1902, I advised iridectomy owing to extensive adhesions, although there was not exclusion of the pupil. The operation was declined. Attention is specially directed to the constant involvement of the same eye, syphilitic cause, extensive exudates.

CASE 7.—Mrs. W., 33 years of age, came to my office December 14, 1903, suffering, as she supposed, from a foreign body under the right upper lid. There was no foreign body, but a faint, deep circumcorneal injection led me to suspect that there was more in the case than appeared. Vision was 20/15 in each eye, pupils were of normal size and reaction, cornea clear. The only item of interest in her history was a mild attack of rheumatism some five or six years before. She is not a strong woman, but is not anemic, nor has her physician, one of our leading practitioners, been able to determine any organic trouble. The day after her first visit to me, on December 15, the circumcorneal injection was deeper, pain unrelieved. Atropin produced about two-thirds dilatation. No deposits on cornea or capsule of lens. For two weeks she remained in this condition, atropin solutions (1 per cent.) used every two hours, and even to constitutional effects, failing to produce farther dilatation. On January 1, 1904, while she was under salicylate of sodium and atropin, there was a sudden increase of the circumcorneal injection and pain. Deposits appeared on posterior corneal surface. She was now given three or four large doses of the salicylates at short intervals, which produced profuse diaphoresis, and this was followed by complete dilatation of the pupil for the first time since she had been under treatment. Two weeks later, when she was supposed to be well, atropin was stopped, with immediate return of circumcorneal injection and pain. During the late winter and spring of 1904 it was necessary to keep her pupil quiet by atropin—pain and injection returning as soon as it was stopped. In the fall she went through a moderately severe attack of iritis in the same eye while away from home. Soon after her return to Baltimore, she again experienced several “flushings” in the right eye, not accompanied by much pain. At no time was there any evidence of rheumatic disturbance other than iritis. Indeed, with the history of only one mild attack, five years ago, it seems uncertain as to whether rheumatism was the causative agent. There are now fine deposits on posterior surface of cornea. Visual acuity is normal, with or without refraction correction—.5 H. as. + 90.

CASE 8.—Mrs. D., 27 years old, seen June, 1903, with right iritis of one week's duration. Pupil was widely dilated, deposits on posterior surface of cornea and lens capsule. From her physician, who had known her since childhood, I obtained the following history: There is a rheumatic and gouty tendency in the family running back at least three generations. The first rheumatic manifestation in this patient occurred in 1900. Four years before this she had had a severe attack of iritis in the left eye from unknown cause. The same eye had passed through a second attack two years later; both, therefore, appearing before her rheumatism. The right eye had had two attacks, in February and June, 1903. Her vision was normal in both eyes with correction of her refraction error, 1.5 diopters of hypermetropia. This patient does not reside in Baltimore and I have not seen her since 1903. I have understood that she has had several attacks of transient congestion and pain in both eyes. There has been no other rheumatic manifestation. Iritis before definite rheumatic manifestation is the point of special interest.

CASE 9.—W. H., age 35, had an attack of acute inflammatory rheumatism when he was 12 years old. Two years later there was some trouble in his left eye. Three years after this attack he was known to have had iritis. The following spring he had a relapse of rheumatism and was compelled to take to crutches for a year. During this time he had several attacks of mild inflammation in his left eye, undoubtedly iritis. During the next eight or ten years he seems to have alternated mild attacks of general rheumatism with left iritis, neither the rheumatism nor iritis being of long duration. In 1896, without previous rheumatic symptoms, he had the severest attack of iritis in his history. From then until I saw him, eight years later, in April, 1904, the left eye had undergone numerous attacks; the right eye had never been involved. I found left pupil excluded by total ringed synechiae, unyielding to atropin. Vision in R. E. was 20/15 by refraction correction, $+0.62$ D. S., c w $+0.25$ D. C. -90 . I confirmed the advice previously given him by Dr. Dunn of Richmond, that in view of the pupillary condition an iridectomy promised best as a preventive method. This operation was performed and a large coloboma secured. A recent letter from him, however, states that it was without effect. He has had two attacks of iritis since my operation, thirteen months ago, with continued rheumatic symptoms.

842 Park Avenue.

EXENTERATION KNIFE-SPATULA.

CHARLES H. BEARD, M.D.,

CHICAGO.

The instrument here pictured, and for the first time described, was designed by the writer, and made by Messrs. V. Muller & Co., of this city, about a year ago. It has since been in constant use at the Illinois Charitable Eye and Ear Infirmary, where it has proven to be admirably adapted to meet the requirements for which it was intended, viz., an improved instrument for the removal of the contents of the sclera in the operation of exenteration of the globe.

As its name indicates, it partakes in qualities and uses of both knife and spatula, being a little too dull for a knife and too sharp for a spatula. It consists of two parts, a blade and a handle. The blade is double-edged, is about 4 mm. wide at its broadest part, where it joins the shank, and gradually tapers to the extremity, where it is nearly rounded. Its length is about $2\frac{1}{2}$ centimeters. It is curved on the flat for two-thirds of the distance from tip to



base to correspond to the meridional concavity of the sclera, and transversely convex on its outer surface to fit the equatorial concavity. Its inner surface is flat. The edges, while not so keen as is the edge requisite in a Graefe knife, are, nevertheless, tolerably trenchant. The rounded end is blunt—not bulbous—so that puncture of the sclera may be easily avoided. The handle is of aluminum, to admit of boiling, and blade and handle are united by a nicely modeled shank.

The object of the instrument is the separation of the uvea from the sclera by its cutting as well as by its riving, or splitting qualities. Its delicate rounded extremity enables one to insert it readily at the *ligimentum pectinatum*, where it is carried around the entire circle, at the base of the cornea, by a gentle sawing movement. It is then pushed further and further back, keeping between sclera and uvea, and always revolving around the antero-posterior axis of the globe, severing whatever serves to bind the two together, till the optic entrance is reached. The loosened tunics are then gathered in front and held by broad-jawed forceps, pulled slightly forward, the tip of the blade is slid past the optic nerve-head so that

the edge may engage the neck of the retina, and the latter is divided by a slight sawing motion. Lastly, under copious irrigation with hot sublimate solution, and with deft sponging, any remaining islands of the uveal tract are scraped away with a small curette having a serrated edge.

The perfect safety attending the modern exenteration, wherein the conjunctiva and Tenon's capsule are left intact, and the outer walls of the globe, including the cornea, are entirely preserved: the slight reaction following, and the large movable stump thus afforded, are causing the procedure more and more to supersede that of enucleation—and justly. I think my colleagues will find the knife-spatula handier and more effective than the various instruments hitherto employed for the same purpose, such as pointed, straight knives, and clumsy spoons and curettes. The best of these is probably the Bunge spoon, and that leaves much to be desired.

Reviews.

THE FOVEA CENTRALIS AND THE ACUITY OF CENTRAL VISION.

[Reviewed by C. H. Beard, M.D., Chicago.]

Sulzer, speaking at a recent meeting of the Paris Ophthalmological Society on the normal acuity of central vision, said, in substance: "It is known that, under the most favorable conditions, the human eye can resolve the image of a grill whose equal elements, of alternate light and shadow, subtend an angle of only 30". The actual width of the image of one of these bars, in an emmetropic eye, is 2.4 μ . Now, histologists have been wont to give to the macular cones a much greater diameter—or a mean of 4 μ . Fortunately, the researches of Rochon-Duvigneaud have established the true diameter of the isolated central elements of the human retina, as a mean of 2.5 μ , which coincides exactly with the visual angle of the minimum separable. This angle corresponds to an acuity double that of Snellen's 1."

The statement that it remained for Rochon-Duvigneaud to establish the diameter of the central cones of the retina as a mean of 2.5 μ is an error. Schultze did this nearly fifty years ago. His measurements were verified by Krause nearly forty years ago—and still more recently by Koster, Dimmer and Greef. Moreover, Schultze gave the diameter of the average fundus foveæ as 200 μ , recently verified by Dimmer. And Krause put the area of the non-vascular portion of the macula at 0.3 to 0.5 of a sq. mm., containing 9,000 cones, 4,000 of which in the fundus foveæ. Koster estimates at 0.8 mm. the diameter *where cones predominate*, and at 0.5 mm. the *diameter where only cones exist*. Therefore, the region exclusively provided with cones is somewhat larger than the fundus foveæ.

Just here occurs to the reviewer the query: Is it not about time that eye specialists were in accord with regard to what is meant by *fovea centralis*? It is still customary with most of them to designate as such the punctiform, sharp excavation in the center of the *macula lutea*. Modern ophthalmology recognizes the fact that the central depression is not confined to this tiny cup, but that the latter is but a central pit—the *fundus foveæ*—within a much more extensive, saucer-like depression, and, the whole taken together, constitutes the *fovea centralis*. The limits of the fovea are

defined by the oval "macular halo," clearly visible in young subjects, and the region is usually larger than the optic disc. The yellow color, or *macula lutea*, is all over it and even extends beyond its rim. Greef divides the region of the *fovea centralis* or *area centralis* into rim or *outer wall*, *clivus*, or sloping zone, and *fundus* or central pit.

Sulzer then gives some interesting results of observations in his own case. Repeated measurements have shown him that, for the right eye, placed at 25 centimeters from the grill, the central visual acuity is maximum for an oval area whose horizontal, or greatest, diameter is 1.8 mm. This corresponds, in a normal eye, to a retinal extent of $120\ \mu$ —or $60\ \mu$ horizontally in either direction from the center of the fovea. This limit once passed, the acuity diminishes slowly and gradually till at $150\ \mu$ from the center it becomes 9 opts. or approximately 0.5 that of Snellen 1. This represents an area on the test object, held 25 centimeters from the eye, of 3.2 mm. From this point the diminution in acuity is more rapid, being at $200\ \mu$ from the center, one opt. or about $1/10$ of Snellen 1. This corresponds, at 25 c. from the eye to an area whose horizontal diameter is 6 mm.

In the vertical sense this extent is less by about one-fourth. Beyond this limit the sense of form diminishes rapidly and falls below the degree of usefulness.

The acuity is maximum for an angular extent of 25 minutes. It is good, i. e., better than 9 opts (0.5 that of Snellen 1) for an angular extent of 13 minutes; and it exists to a useful degree, i. e., exceeds or *attains* 1 opt. for an angular extent of $1^\circ 23'$ and $30''$. These values are hard to determine because of the extreme difficulty of maintaining a rigid fixation, while, at the same time, paying the requisite attention to the paracentral parts of the image. Hence, the figures must be taken as provisional till verified by numerous observations. The figures heretofore given by different authors are much too high. In proportion as the methods of experimentation have become more rigorous the values obtained have become smaller. The test object should be exposed to the fixing eye only just long enough for the acuity to reach the maximum throughout its whole extent. The observer retains the limit, without varying the fixation, till the image is clearly resolved. The perfect central part of the retina presents, then, a surface of 17,000 square V, one square mm. containing 1,000,000 square V.

On comparing the shortest time in which the grill can strike the retina consistent with a perception of the image it is found that it is shorter for those bars (of light and shadow) immediately in

the point of fixation than for those eccentric to it. In other words, about 10 per cent. of the area of the fovea, centrally located, is possessed of more rapid perception than is the remainder. But the acuity reaches the same perfection over the adjacent area when the visual impression is sufficiently prolonged. This difference is due to the arrangement of the "horizontal elements of conduction" of Ramon y Cajal. In a state of repose, and under the influence of feeble illumination, the central cones are a unit (Charpentier). All sources of light, below a given intensity, take the form of a disc with a constant diameter. The isolation of the cones is produced through the influence of *images* and proceeds from the center of the fovea toward the periphery.

LATENT HYPERMETROPIA, THE CAUSE OF THE DIFFICULTIES ATTENDING REFRACTION WORK.

LEWIS S. DIXON, M.D.

[Reviewed by Frank C. Todd, M.D., Minneapolis.]

To solve the problem of relieving those patients from symptoms believed to be referable to eye strain who do not respond at once or permanently to the prescribing of glasses, has been the object of Dixon's studies of his practice covering a period of fifteen years exclusively devoted to refraction work. The conclusions of a man of Dr. Dixon's experience, one who is devoting his time exclusively to refraction work, should be worth much to all ophthalmologists, for all have the unhappy experience of failing to relieve patients suffering from symptoms which seem surely to be caused by eyestrain. In view of the tendency of many enthusiasts, students of muscle insufficiencies, to believe and teach that such failures arise from a lack of appreciation of the importance of disturbances in the balance of the extra ocular muscles and that these difficult cases will invariably be found to be due to some muscle imbalance, to be corrected by some muscle treatment, the contention that latent hyperopia is the disturbing factor is a relief. If it becomes necessary to believe that extra ocular muscles showing only a slight abnormality are at fault, we are at a loss to know how best to overcome the difficulty, since we are urged by one never to operate and by another that operation is the necessary treatment. In any event the mistakes made by the improper treatment of supposed and real latent squints are the cause of much suffering and deformity to many unfortunate patients and it were better to disregard them entirely than to do

something which has to be undone, the undoing being more difficult than the doing, while the overcorrection of hyperopia can not result in anything serious. In view of this teaching we believe Dr. Dixon's statement that the correction of a latent or undiscovered hypermetropia satisfactorily solves this problem and proves a "pass key" to all his difficulties.

While the doctor seems to occupy an extreme position, we believe that there is much truth in what he says and far more than in the case of the muscle extremists, though we think that there are many difficult cases which are dependent upon muscle insufficiencies and our lack of knowledge as to how to overcome them, as well as inaccurate correction of astigmatism and overlooked inconspicuous fundus diseases and many other considerations which are at least contributing factors, such as disturbances of the general health.

Dr. Dixon says "the origin of the eye strain is, of course, easily and quickly traced to the muscle involved in the optical adjustment of the eyes; for the refractive and perceiving elements are entirely passive in their functions." This is a premise which is undoubtedly true in most cases, but certainly symptoms of eye strain identical with those which occur from strain of the ocular muscles, occur as a result of and dependent on inflammatory diseases of the choroid and retina. He believes in correcting the total hypermetropia in all cases and at once, if possible, and he has found that in those cases where he or other oculists have corrected what they supposed to be the total hypermetropia, who have difficulty after the correction, that the trouble is caused by a latent hypermetropia. On more thorough examination by means of persistent research he has been able to develop more latent hypermetropia, on correction of which the patient is relieved.

Dr. George J. Bull of Paris has shown in a series of photographs a test card, the damaging effects of putting weak convex glasses in front of the objective of an accurately focussed camera. One-fourth D. will blur, quite beyond recognition, two lines, nearly three: $1\frac{1}{2}$ D. will blur out five lines: $\frac{3}{4}$ D. blurs out six or seven, and $11\frac{1}{2}$ D. leaves nothing discernible on the card. This result is a mathematical necessity at all times. If, therefore, a $+ .25$ lens is put in front of an eye having normal vision with its ciliary muscle thoroughly relaxed, it must produce the same blurring effect: and no practice or lapse of time, or number of experiments would ever overcome the blur. If, however, after a few minutes, or half an hour, or even at any trial, vision does become fairly clear for the normal line, even for a moment, there must have been, at

that moment, some compensating relaxation of the ciliary muscle: for any action must, of necessity, increase the blur. But, if the muscle relaxed, it could not have been at rest before. A muscle at work may refuse to relax even under much urging and for a very long time; but a muscle at rest can not possibly relax at any time.

Fifty refusals to see through a glass prove nothing; one moment's acceptance does. Failure to find hypermetropia is never proof of its absence; finding it is positive proof of its presence.

Studying his own records he found that so long as he prescribed a correction which was found to give the sharpest vision the results were only temporary and that success in relieving symptoms of eye strain was attained only after increasing the convexity of the lenses. Taking 300 cases at random he found that astigmatic corrections had been decreased in converging power less than 1,100 D. on the average, and increased less than 1.10 D. Spherical corrections had been diminished only 1.20 D. and increased over 1 D. on the average. This increase was in addition to what was supposed to be, at first, the proper correction: and mydriatics had been used in *full half of the cases*.

Correct conclusions can not be drawn from such statistics because it is the rule that latent hyperopia cannot be brought out even by the fogging system mentioned, without the use of a cycloplegic, and the doctor would have done better had he included in his statistics only cases where a cycloplegic had been used. We would expect that cases where a cycloplegic had not been used would show an average of fully 2 diopters more hyperopia when thorough paralysis had been produced.

While we believe in the importance of fully correcting the total hyperopia, at least as an ultimate aim in most cases, and that failure to do so is a common error, we believe that Dr. Dixon has overestimated its importance as a panacea for all our troubles and that he has arrived at these conclusions because he had not used a cycloplegic in many cases (in the statistics given only about one-half). We think his paper is a strong argument for the use of a cycloplegic in *all cases* where not contraindicated, and while we appreciate the necessity for such practice with opticians, we fail to see why oculists who are licensed to use medicine fail to use a cycloplegic in all cases where not contraindicated.

Neither do we consider that full relaxation of the ciliary muscle can be secured, excepting rarely, by using a solution of homatropin, not that this remedy will not prove effective if absorbed, but it is so irritating that the flow of tears it stimulates causes the homa-

tropin to be washed away. Comparative tests made by several observers and in our experiments have shown that the solution did not produce, but rarely, full paralysis as compared with atropin, while the gelatin discs of homatropin and cocaine (of Casey Wood) applied after dropping in a drop of cocaine solution compelling the patient to keep the eyes closed and repeating the application in twenty minutes again, having the eyes closed for forty minutes more would produce as complete paralysis in nearly all cases as atropin. Used in this manner, the irritation is prevented by the use of cocaine, which further facilitates absorption of the homatropin into the aqueous humor. The gelatin disc is not washed out, the eye being kept closed, but is gradually melted and gradually, but continuously, allows the homatropin to be absorbed.

His contention is certainly correct and rational that patients requiring correction for hypermetropia should wear their glasses constantly and not alone for near work, as is so often the custom, arguing that with the normal eye the ciliary muscle is brought into play only for near work, that at all other times there is rest and consequently the normal eye is able to perform its function without eye strain; that the patient with hypermetropia uncorrected except for near work is constantly straining his ciliary muscle while his eyes are open and that even though a convex lens is used for near work they are not capable of as easy use because they are called on to perform labor after they are already exhausted. "Exhaustion and strain do not come primarily from close work, but from forcing tired eyes to do close work; eyes that get no rest sixteen hours out of the twenty-four; and that do not know how to accept it, if offered. Rest should not come in near vision, it belongs with distant vision; yet, knowing this, we do not even urge the patient to learn how to rest his weary muscles."

He maintains that a small amount of uncorrected hypermetropia will cause considerable difficulty, and this we believe is true, in fact, we have seen cases where a patient had not suffered from the nervous effects of eye strain to a great extent, who had a high degree, say 6 D. of hypermetropia, but the correction having been given because of blurred vision such patient not having been able to strain sufficient to aid vision, but upon having been given glasses which corrected a portion of the hypermetropia even up to 5 or 5½ D., would sooner or later complain of symptoms of eye strain, such as headache, which was relieved by the correction of the remaining comparatively small amount of hypermetropia.

He complains of the difficulty of getting patients to follow the advice of wearing the glasses constantly. We can only advise after

doing our best to explain to our patients the whys; unfortunately many of them can not understand after a proper explanation, and if they do not take the advice the responsibility rests with them. We have the satisfaction of knowing that sooner or later they will find our advice correct. He suggests for some such cases the use of a pair of bifocals with small segments at the top; the lower glass being strong enough to dull distant vision to about $\frac{2}{3}$ of normal, while the upper glass allows for fairly distinct vision, such glasses to be worn constantly, by which means the old habit, straining accommodation, may be gradually broken up. He calls attention in the same connection of the overcorrection of myopia which is so commonly practiced by opticians and those who do not use a cycloplegic. The cases which are appended are good examples in illustration of his contention.

TROPICAL EYE DISEASES.*

DR. GUIDO RODOLFO RUATA.

[Reviewed by Dr. Wm. Dudley Hall of Boston, Mass.]

Our national policy of territorial expansion in the tropics lends added interest to a timely paper recently published by Dr. Ruata, in which he calls attention to the close relationship existing between certain eye diseases and local conditions of climate, congestion of population, degree of civilization and lack of hygienic measures found in these countries. The immense plains over which are currents of air having but little motion and an atmosphere, warm and enervating, loaded with infecting germs, offer the greatest facility for the diffusion of disease. Conjunctivitis is very common in Asia Minor, Arabia and Syria, and in the latter country appears either as the catarrhal form or trachoma. The summers are long and rainless, dense clouds of dust fill the air where there is no shelter from a merciless sun, and but insufficient protection from enormous swarms of flies. The prevailing type is the subacute or chronic, with large granules, the corneal complications reaching 12 per cent. in Syria and 24 per cent. in Palestine. Children suffer from a not very severe muco-purulent without corneal involvement and the same type is observed between similar parallels in China and Japan. Granular ophthalmia with grave sequelæ even in young children is found in Turkistan, 50 per cent. of disability is said to be due to a prevailing ophthalmia in Persia, while along the Turkish frontier trachoma is frequently

* *Annali di Ottalmologia*, xxxiii, 6.

met with. Conjunctival diseases are frequently met with in many parts of India, especially in the low altitudes, the natives and Europeans being alike affected. In China, with the exception of gastro-intestinal disturbances, no form of disease is more common. Glaucoma is sufficiently rare, but trachoma easily reaches 75 per cent. of eye disease and the same high percentage applies to Japan. In Corea, where blindness is very common, conjunctivitis occupies the second place in frequency of all diseases. Australian aboriginal population are very prone to conjunctival disease, although in New Guinea the English seem to be immune. Egypt enjoys the mournful first place in frequency of granular ophthalmia, which according to Van Milligen is 80 per cent. of all other eye diseases. Gros describes a form of conjunctivitis in Algeria that attacks children almost exclusively, which differs from spring catarrh by not extending to the bulbar conjunctiva and cornea and from trachoma by not causing pannus. In eastern and central Africa blindness as the result of eye disease is very common, likewise in southern Africa, but western Africa seems to enjoy immunity from granular conjunctivitis. In America the Canadians do not have trachoma and the same is true of the negroes of the United States and those of the West Indies. In Brazil and Guiana the English are apt to be affected, but the percentage is small in Peru, Chili and Bolivia. Tear passage troubles bear about the same relative frequency that they do in Europe: they are quite uncommon in Eastern Asia.

A manner of living when modified according to the demands of a higher civilization is productive of constitutional alterations in the condition of the ruder people. Hyperopia is the ocular condition generally found to exist in such races as are obliged to use the power of vision through long extent of space in order to obtain the necessities of life, as in the occupation of hunting and fishing. The visual acuteness is very great and there is a compensating development of the ciliary muscle. When beginnings of civilization have taken place or mixture of the European with the native, or by evolution and progression of the civic in the same people, the functions of the eye have been found to have undergone quite a considerable change by demanding more minute work at shorter distances, and it has been possible to observe a resulting myopia scattered through populations to whom such changed conditions apply, a very good example being the Chinese, the people of India, central and eastern America. Although there have been attempts to demonstrate dolichocephalia as a phenomenon concomitant with myopia and brachycephalia with hypermetropia, considering them

as adaptation of race to demands of development, the relation is not absolute; nevertheless there is an ethnical and anthropological connection, as the brachycephalic cranial conformation is found among northern races and the other among the southern and negro races. As an example of the influence of race upon ocular disease may be mentioned observations of Swan Burnett, who stated in 1876 that trachoma did not exist among the negroes of the United States. The West Indians are likewise immune, and the same is true of the negroes of West Africa. The natives of Canada and the Esquimaux are not susceptible, the Singalese enjoy a relative immunity, while in the white races, the Chinese and Japs the tendency is high. The tribes of Manitoba bordering on the Russian Mennonites are rarely affected by trachoma, while the latter are severely afflicted. Glaucoma is met with about as frequently as in Europe; it is unusual among the people of India, the Arabs and negroes.

Nature, in its endeavor to protect from undue influence of excessive dazzling or sunlight reflected over vast desert levels, where nothing green exists, either as vegetation or foliage, to rest the tired eye, surrounds the human frame with various pigment shades, some of which exclude the chemically active, the others the heat rays. Similar variations in pigmentation are noticed in the eyes of the colored races.

The amblyopia due to the temporary paralysis occasioned by excessive light stimulation bears close relation to the intensity of the light and the duration of the exposure, the resulting blindness varying from a few seconds to many hours. Hemeralopia is quite common in Sumatra, where it is accompanied by a mild albuminuria; in the Cameroon and in the German possessions in eastern Africa, nyctalopia, continuing for weeks or months, but which improved under better light conditions, has been observed. When the light is very intense the retinal disturbance may be accompanied by a conjunctivitis and even corneal erosions, and this is what frequently happens after exposure to the light which has been reflected from snow or to the electric light. At first there is a transitory stage of anesthesia which after a few hours gives place to a reactive hyperesthesia of the irritated nerve terminations of the cornea and conjunctiva, and this is precisely what takes place in warm countries in eyes exposed to too intense sunlight and seems to depend on atrophy and pigment alterations at the macula. A form of asthenopia peculiar to those engaged collecting sponges and probably dependent more or less on solar light reflected from the surface of the water has been noticed. Nyctalopia is met with

in tropical countries in individuals who have been exposed to strong sunlight, especially if they are weakened by malarial fever, chronic intestinal troubles or scurvy. It is a trophic neurosis due to diminished innervation and loss of vitality, and frequently is associated with xerosis in the poorly nourished. Persons in apparent good health may after prolonged exposure to too intense light, show an insensibility more or less pronounced for sources of light of weak intensity and in case that a large number of people are simultaneously exposed as soldiers during maneuvers, or sailors who are obliged to sustain through many hours the dazzling reflection from a sunlit tropical sea, the condition may seem to assume the importance of an epidemic. How much worse in the poorly nourished field laborers of Brazil, fed principally on beans; anemic, cachectic nictalopic negroes, who at nightfall are led to their hovels until blindness finally supervenes. When hemeralopia attacks well nourished individuals it can be easily managed; it may be associated with malaria, hepatic affections and albuminuria. Keratomalacia and xerosis of the bulbar conjunctiva are frequent complications and may be ascribed to defective nutrition. Although the pathology is obscure De Gouvea has noticed before the appearance of the xerosis that hemeralopic negroes show diminished hearing and vision, together with dryness and exfoliation of the skin and falling out of the hair, which he attributes to general cachexia. Protection from excessive light, attention to general nutrition and liver therapy seem to promise good results providing the original physical condition is in any way satisfactory.

Xerosis in its two forms, the epithelial and the parenchymatous, is found in individuals in a reduced state of nutrition from fasting or from other causes. In the tropics it is found in debilitated individuals who have been exposed to excessive reflected light or weakened by disease or lack of sufficient food. The epithelial form is almost always accompanied by nocturnal blindness. A severer form accompanied by keratomalacia is noticed in the native quarters of Bombay, Calcutta and Hongkong. The undue loss of water in quick cholera cases has been considered as a predisposing cause.

Cataract has been anciently and very generally ascribed to reflected light and heat action upon the lens. Observers, however, have noticed and mentioned its excessive rarity among the natives of warm countries. Reflected light from snow is far more apt to set up a severe catarrhal ophthalmia. In Lapland and Norway cataract is found to be very rare. The predisposition of workers who are exposed to excessive heat, as glass blowers and furnace

repairers, would rather suggest the great loss of water by perspiration as a possible cause in the case of sub-tropical countries. Certainly the shorter duration of life in the tropics would tend to explain in part why they are less common than in countries where the life period is longer. India seems to be an exception and possibly it may be due to repeated attacks of ophthalmia, severe, chronic and incurable.

Erythropsia is due to over-stimulation of the nervous visual apparatus by exposure to strong light. It may last for a few minutes or for days, or it may come and go at intervals. It may come on weeks or months after a cataract operation and during the attacks all objects may be seen as bright red, purple or violet. The natives depend instinctively upon the foliage for protection, while in civilized communities colored glass is used and the color selected is of prime importance. The dangerous actinic rays comprised between the lines F. H. (Fraunhofer) are excluded by amber glass: peacock blue excludes rays (heat) between A. F.; smoked glass excludes only luminous rays.

Exposure to wind or dust is a prolific cause of many forms of conjunctival inflammation. The purulent form is met with in many parts of Egypt where the natives are apt to live and sleep in the open, exposed to sun's rays reflected from wide areas of sandy soil, bereft of vegetation, where a warm wind raises dense clouds of dust, and at the same time neglecting the usual methods of treatment. The pterigium is very common, especially in India, and usually there is a history of a previous pinguecula. It has been also noticed frequently in Egypt, Madeira, Spain and Italy. Granular conjunctivitis is a disease of poverty and bad hygiene. Trachoma diminishes with the altitude, but seems to be favored by those conditions which are adapted to the spread of malaria. The natives of Turkestan treat entropium by binding a long fold of skin of the lid between two splinters of wood, leaving it in place till the necrosed piece falls off, with temporary good results. Blindness is very common from this disease, small pox and glaucoma, reaching even 23 per cent. The so-called "Button of the East," an ulcerating granuloma of the eyelid, is endemic in limited areas of many of the farm countries. Herpetic and eczematous eruptions, syphilitic lesions are sufficiently common. Elephantiasis has been described. Malignant tumors are rare.

Malaria occupies in tropical ophthalmology a position of the greatest importance on account of its extensive diffusion, its characteristic symptoms, and its peculiar pathology. As far back as 1833 Stosch mentions intermittent fever associated with amaurosis.

and in 1878 Poncet called attention to the importance of ocular malarial affections, and that in malignant malaria he had found the fundus lesions to be constant microscopically. The ocular lesions may be due to disturbances of circulation, due to the plasmodium or to the toxin elaborated by the parasite, together with individual idiosyncrasy, which plays quite a part in determining the character and intensity of the reaction of the organism. A conjunctivitis, intermittent, unilateral, with but slight symptoms of irritation, which yields to quinin and which may even replace the ordinary malarial pyrexia, has been seen in Algeria, although it is quite rare in China. An epidemic form has been seen in the Caroline Islands. A reflex form with severe trigeminal neuralgia, but with slight conjunctival discomfort, is common. Xerosis is rather a concomitant than a true infective manifestation. Keratitis may be accompanied by vesicles. Opinions differ as to the etiology of the necrotic form. Martin believes it to be malarial, whereas Zellweger considers it a keratomalacia similar to that observed in other countries after long and exhausting disease. Kip and Van Millengen have studied the dendritic variety. Fuchs has described a form involving the deeper layers of the cornea which is not accompanied by marked signs of irritation. All these different forms seem to do very well under quinin. Cases of iritis, occurring during attacks of malaria in individuals from whom histories of gout, rheumatism and syphilis were not obtained, and which seemed to improve after the administration of quinin, have been reported as observed in India and Africa, which would suggest a probable cause. Direct evidence that malaria causes cataract is wanting. Vitreous opacities due to malaria were described by Seely in 1882: usually supraorbital and bulbar pain were present. The retina and choroid, according to Yarr, seem to be involved in about 20 per cent. of cases of malarial infection. There is usually pain, fundus congestion, edematous disc and sometimes hemorrhages. He supposes that the red corpuscles containing the plasmodium and the white containing pigment granules cause small thrombi in the retinal and choroidal vessels and that these give rise to true apoplexies. He would explain the transient visual disturbances so often observed in malaria as the result of localized edema due to small hemorrhages. Neuritis is accompanied by pain and frequently by nocturnal blindness. Sulzer considers the variations in visual acuteness observed in malarial neuritis as distinguishing it from other forms. Manson differentiates between quinin and malarial amblyopia by the history of the administration of large doses, the bilateral sudden onset accompanied by deafness, dilated im-

movable pupil, complete loss of vision for a period, pale fundus and disc, contracted vessels, early return of central vision.

Lepra, although a disease of colder climates, should be included among the tropical or subtropical diseases. The tubercular form attacks the eye more frequently than the anesthetic. The lid lesions are indolent, the final conditions being such as usually follow cicatricial contraction. Tubercles about the size of the head of a pin are found upon the conjunctiva close to the cornea. There is usually more or less infiltration of the sclerotic, and, according to Morax, is greatest at the point of entrance of the anterior ciliary vessels. The corneal infiltration may have the appearance of a small tumor, which is full of bacilli and leprotic cells. Punctiform opacities are found at different levels. There may be likewise a diffuse peripheral infiltration gradually approaching the center. When the iris is involved the pupil early becomes filled with exudate, with sometimes an attack of glaucoma. Some writers believe the bacilli reach the eye by the blood current, while others consider the lymphatics as the channels for dissemination. It is worthy of mention that there is a close resemblance between leprous keratitis and the corneal manifestations of tuberculosis and hereditary syphilis.

Plague.—The cornea, iris and lens were found to be affected during an epidemic in India. The fundus was involved in only a small proportion of the cases. It is a curious fact that, although the organs were affected by hemorrhagic extravasation, retinal hemorrhage was unusual.

Syphilis.—Iritis is much more severe in the tropics. Tertiary lesions are quite common among the Chinese, especially in the choroid.

Cannabis indica and opium may cause an amblyopia resembling that of nicotine.

Insects and Animal Parasites.—In those countries where there exists the greatest amount of filth and lack of every sort of normal hygiene the *musca domestica* (Linneus) is an important factor in the propagation of disease. At the time of ripening of the fruits, most rich in sugar, immense swarms of flies hover about the trees and invade the huts of the natives. The time of the picking always coincides with the greatest amount of ophthalmia. The *cantharis vesicatoria* (Spanish fly) and the cochineal insect is responsible for a blepharoconjunctivitis. The *musca vomitoria* deposits its eggs upon the lids of sleeping people and thus causes a purulent ophthalmia. Upon the *enforbia ferox*, a poisonous plant of Cuba, there lives a fly endowed with the mimicry of the chameleon which

carries the pollen of the plant to the lids of sleeping people, thereby setting up a severe vesicular eruption. The negroes of Sierra Leone are subject to a blepharitis caused by the pediculus pubis. An ant, the *termes bucephalus*, of Porto Rico, is said to attack the eyes of sleeping infants unless the cradle is suspended. The great ant of Senegal, *termes fatale*, by an acrid secretion, may give rise to a violent conjunctivitis. In South America there is a nocturnal insect that flies against the eye, leaving an anterior horn embedded in the cornea. In San Domingo there are small sarcopteri, about the size of the itch mite, that invade the free edge of the eyelid. In Porto Rico there is a large spider, the bite of which is said to cause elephantiasis. In America there is a fly which deposits larvæ upon the skin: the larvæ penetrate and cause swelling. Larvæ may likewise be found in the conjunctival sac. The endemic area of the filaria loa is comprised between 5° north and 15° south of western Africa. It affects Europeans and natives alike. They only originate in this area, and cases observed elsewhere come from there. The parasite may live for many years in the body of the host. When beneath the conjunctiva, movement may be observed. The *filaria oculi humani* has been observed in the anterior chamber, the vitreous and lens. It is more commonly found in India in the lower animals than in man.

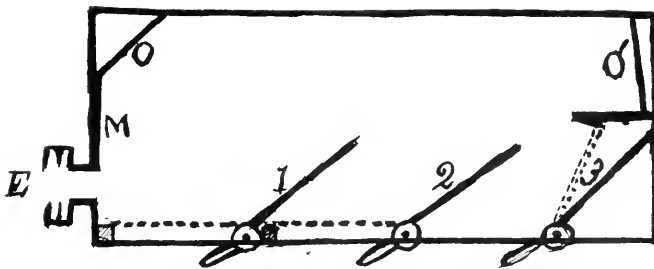
A NEW APPARATUS TO DETECT MALINGERING.

[Reviewed by C. H. Beard, M.D., Chicago.]

(Illustrated.)

A new apparatus to detect malingering was presented by Bouchart at the meeting of the Paris Ophthalmological Society. The inventor remarks that we have various means to employ with subjects who claim to have one good eye and one poor eye. But, as regards those who declare that both eyes are amblyopic, it is more difficult to verify the truth or falsity of their statements. The apparatus, elegantly made by Carnot, successor to Crété, consists of a box, 50x20x7 centimeters. The sight-hole comprises a short tube, closed by a plain glass to keep out dust, and has grooves for the correcting lenses. It contains four mirrors, three of which are movable and controlled by keys on the outside (see drawing). Duplicate types of four graduated lines are placed at O & O', illuminated by openings in the box. The four tests provided for are best made as follows: The three movable mirrors are placed in their working positions. The subject is asked to call the letters he sees through the sight-hole. By a subtle movement

of its key mirror No. 1 is turned down, leaving No. 2 to catch the image. The subject again reads. Mirror No. 2 is then brought into its position of repose, leaving No. 3 working. The third test is made. For the fourth test the movement of the third mirror is very slight—only about 15° —just enough to throw it *out* of the line of types O and *in* line with the reflection of O' in the fixed mirror. Between each test the box, which is held in the examiner's hands, is removed from the examined eye, under some pretext, in order to manipulate the key. Each time also the results obtained are noted. The distances at which the images are viewed are 40, 60, 100 and 150 centimeters. The gamut of visual acuities comprises many degrees between $1\frac{1}{5}$ and 1, as shown by this table:



O O'. Test-types; M, Fixed mirror; 1, 2, 3, Movable mirrors; E, Sight-hole.

	1st line.	2nd line.	3rd line.	4th line.
Test I, $V=4\frac{1}{5}$		$\frac{2}{15}$	$\frac{1}{10}$	$\frac{1}{15}$
Test II, $V=6\frac{1}{15}$		$\frac{1}{5}$	$\frac{2}{15}$	$\frac{1}{10}$
Test III, $V=2\frac{1}{3}$		$\frac{1}{3}$	$\frac{1}{5}$	$\frac{1}{6}$
Test IV, $V=1$		$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$

The subject is placed in a predicament. Being unable to judge as to the responses that would be favorable to his case he must either be sincere or reply at random. If his replies are false their non-concordance reveals it. The principle of the mechanism is, by a box of such small dimensions to give to the object viewed an apparent distance much inferior to the real. The subject is thus led to approach the truth more closely than in processes of examination where he can appreciate the actual position of the test objects.

A. Terson for such tests, in preference to a complex apparatus, cuts out the letters of an ordinary test chart and glues them, all mixed up, but **in lines, upon a** piece of eardboard. The subject is asked to read this chart, and the results carefully noted. Some simulators will read the smallest letters as well as the

largest when thus in lines. Lastly he is made to read the same letters as they appear on the original chart. Adler, in 1896, devised a similar scheme, but caused the normal chart to be read first. Terson, however, deems it better to entrap the simulator at the very outset—especially one who is seeking a *personal injury indemnity*.

Reports of Societies.

BERLIN OPHTHALMOLOGICAL SOCIETY.

Meeting of May, 1905.

President Prof. von Michel in the chair.

CHRONIC TUBERCULOUS CHORIO-RETINITIS DISSEMINATA.

Dr. Schultz-Zehden shares the well-known and often disputed views of Prof. von Michel on this disease. In one of his cases, a man 72 years old, who had shown a whitish choroid spot four times as large as the disc, the histological examination of the choroid after death revealed a typical tubercle, although no other organ of the body was tuberculous. Dr. Schultz-Zehden believes that the above disease is a well-defined one *sui generis*, that no other signs of tuberculosis need exist and that the prognosis is good. Ophthalmoscopic diagnosis is difficult, since the picture varies and is dependent on the histological structure. After showing a few other cases and microscopic sections he concludes that as to the therapeutics the etiology of the disease is especially important.

Discussion.—von Michel is glad that Dr. Schultz-Zehden can corroborate the views he published years ago. He has no doubt that this disease is more frequent than anyone supposes, especially if we would in all cases examine the periphery more carefully. There is no functional disturbance. Diseases of the blood vessels from syphilis or arteriosclerosis are to be differentiated, also the very rare choroiditis caused by pneumococci in pneumonia.

ANGIOMA OF THE CHOROID.

Dr. Fehr described a case which had been examined 20 years ago in Prof. Hirschberg's clinic, and now presented detachment of the retina, complicated cataract and glaucoma. The eyeball was therefore removed and a flat angioma covered with bone was discovered. Nine such cases are known.

NEW OPERATION FOR STRABISMUS (TRANSPLANTATION OF THE TENDON).

Dr. von Pflugh, Dresden. After a review of numerous authors' opinions on the bad final results of the common squint operations, the impossibility of estimating the effect, he gives a short

description of his operation and instruments. Both antagonists (or only one of the tendons) are resected temporarily, *i. e.*, their tendons are cut off, then the eyeball is placed straight and the tendons sewed on again. The straight position is found out by means of an instrument with a scale. Before operating he figures the tangent the eyeball makes in moving; if the angle squint is 20° for 5 m. distance, the tangent for the eyeball-movements is 4.4 mm.

Discussion.—von Michel can not share the pessimistic views on the results of strabismus operations. He is quite satisfied with his results (in five years he operated on 2,547 cases, amongst these 2,219 tenotomies). He believes that his results are due to his advancement operation (he advances the capsule also). He inquires how many operations Dr. von Pflugh had done after his new method.

Dr. von Pflugh answered, only four, but all of these were successful. In Heidelberg he will give full details.

VISION WITH CYLINDERS.

Dr. Feilchenfeld wishes to call attention to the fact that so many astigmatic patients with oblique axes can not wear their glasses comfortably. He explains the mathematic reason and suggests turning the glasses a little for reading purposes. Dr. Feilchenfeld believes this to be an old experience of many oculists, but could not find any mention or explanation in literature. (Cyclophoria and pseudocyclophoria are, it seems to me, apparently unknown to him.)

Dr. Salamonsohn mentions that this is nothing new and makes some clinical remarks.

✱ : ✱

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of April 29, 1905.

Dr. Wm. L. Hess of Denver, presiding.

OPAQUE CORNEA.

Dr. D. H. Coover of Denver presented the following case: F. K., male, aged 29. In February, 1900, while living in Alaska, was attacked with pain, photophobia and redness of the left eye, which soon subsided. In April following he had an attack of snow-blindness, when the eye became very red, swollen and painful, with a slight mucous secretion. Continuous poulticing with tea leaves was carried out by the patient for six weeks, during

which time he noticed several white spots on the cornea, below the pupil. He alleges that these were scraped by Dr. Kibbé of Seattle, but returned very shortly afterwards and remained without giving very much trouble until two months ago, when he noticed the opacity spreading. It extended over the whole cornea except a clear space about 3 mm. wide at the upper margin of the cornea and over a 3 mm. pupillary space. There were apparently several layers of the opaque exudate. The superficial layer could be scraped off leaving clear cornea over the pupillary layer, but at the sclerocorneal margin there were other thicker layers of exudate which contained vessels. The superficial layer would scale off at times, but quickly reform. There was no pain and but little discomfort. Vision = 5/200. No dryness of cornea or conjunctiva.

One week later Dr. Coover reported that the use of trikresol solution caused an exfoliation of the superficial layer, and that a bacteriologic examination of it showed *eriosis bacilli* in pure culture in great abundance.

Discussion.—Drs. C. E. Walker and E. R. Neepor had seen similar effects accompanying vernal conjunctivitis, where the opacity cleared very much in winter. Dr. Neepor had seen a case in which three-fifths of the cornea and the adjoining sclera were opaque, which showed marked amelioration of all unpleasant symptoms while working in a mine, and also while using anti-tetanic serum for lockjaw. He suggested the use of x-rays in Dr. Coover's case.

Dr. Jackson indorsed the last suggestion, but not that of vernal conjunctivitis. He thought it would be interesting to trace the effects of snow-blindness in the cornea. The principal exudates lie under the epithelium, where the nerves ramify, hence the anesthesia.

Drs. Neepor and Walker had seen small corneal ulcers and maculae following snow-blindness.

Dr. G. F. Libby had seen the same, and also iritis adhesions.

OPAQUE CORNEA WITH PANNUS.

Dr. E. M. Marbourg of Pueblo reported this case: There was present purulent discharge containing staphylococci, a grayish membrane and granulations on the upper palpebral conjunctiva, and pustules on the upper lid and nose.

Dr. Edward Jackson of Denver reported the case of a coal miner with opaque cornea. The eye was normal until injured, supposedly with rock or coal. The whole cornea became opaque

in three or four days. There was a bit of coal in the center of the cornea. The opacity was in shell-like layers, and there were spots of white on the palpebral conjunctiva of the upper lid. The appearance was somewhat similar to that of Leber's conjunctivitis petriformis. The cornea was but little changed in four months. The center then looked like cracked egg shell, and the spots on the conjunctiva were smaller. At this time the cornea was scraped. The white staphylococcus was the only micro-organism found. Vessels were found beneath the opacity, running to the center. The result was removal of the film, but considerable opacity, vision equal fingers at 8 inches. The film consisted largely of calcium phosphate and carbonate. No lead and no organic salt of lime. Dr. Jackson thought that the injury had been partly by chemical action that caused coagulation; but was not followed by breaking down, and allowed a deposit of lime salts.

INCISED WOUND OF THE CORNEA, IRIS AND LENS.

Dr. Hess exhibited this case, which had been shown at the meeting March 18, two hours after the injury. The corneal wound was healed, but vascularized, the lens completely cataractous, and there were bands of exudate across the pupil, with two small peripheral openings through which slight eccentric vision was obtained.

Discussion.—As the eye was still sensitive to handling it was the general opinion that operation should be deferred.

OPHTHALMIA NEONATORUM.

Dr. E. R. Neeper of Colorado Springs reported two cases of this disease in which the *use of argyrol* (50 per cent.) was followed by congestion of the nasal mucous membrane, with profuse whitish nasal discharge; with dark specks of precipitated silver in the vomit of one case, and in the stools of the other. Adrenalin was used in the eyes for the congestion, and it was thought to have rendered the lacrimal canal patulous, and allowed the argyrol free passage into the nose.

PAIN FOLLOWING USE OF ARGYROL.

Dr. E. W. Stevens of Denver reported a case in which *severe pain throughout the distribution of the fifth nerve* followed the *use of argyrol* in 20 per cent. solution for gonorrheal ophthalmia, though the drug checked the discharge. Four recently prepared solutions of argyrol were used in this case, all causing severe pain. Suddenly the cornea thinned, but did not ulcerate. Incision became necessary. Dr. Stevens would use protargol for adults in the future.

Dr. Edward Jackson reported a case of *ophthalmia neonatorum* in which there was a superficial haziness of the cornea 5 to 6 mm. in diameter, and patches of yellowish exudate 1 to 2 mm. thick covering the conjunctiva of both lids. Between these patches were hemorrhagic dots. Silver nitrate solutions, 2 and 5 per cent., had been used twice daily, and protargol solutions as a wash more frequently. He advised argyrol or protargol for children, protargol for adults.

Dr. G. F. Libby of Denver reported two cases of *interstitial keratitis* occurring at 15 years of age in two out of four children of a syphilitic father, the other children being younger.

Dr. C. A. Ringle of Greeley reported a case of *optic atrophy* occurring three weeks after a spree, vision being reduced to 20 40; also a case of *gonorrheal ophthalmia* at 35 years, in which, in spite of treatment with argyrol (25 per cent.) followed by silver nitrate (2 per cent.) and frequent irrigation with boric acid solution, the cornea sloughed and enucleation became necessary.

GEORGE F. LIBBY, Secretary.

Notes and News.

OPHTHALMIC SECTION OF THE AMERICAN MEDICAL ASSOCIATION.—The following officers were elected for the ensuing year: Chairman, Dr. L. H. Taylor, Wilkesbarre, Pa.; vice-chairman, Dr. W. H. Wilder, Chicago, Ill.; secretary, Dr. A. E. Bulson, Jr., Fort Wayne, Ind.; member of House of Delegates, Dr. C. R. Holmes, Cincinnati.

THE following are the officers of and the subjects for special discussion in the Ophthalmic Section of the British Medical Association, which meets July 24 to 28, in Leicester:

President, George Andreas Berry, F.R.C.S., Edin., Edinburgh; vice-presidents, Wm. Mardon Beaumont, M.R.C.S., Bath; Edwin Collier Green, M.R.C.S., Derby; honorary secretaries, Robert Wallace Wesley Henry, M.D., Leicester; John Herbert Parsons, F.R.C.S., London.

A. Intraocular Tuberculosis: Its Etiology, Diagnosis, Prognosis and Treatment. Opener, Walter H. H. Jessop, M.B., F.R.C.S.

B. Capsular Complications after Cataract Extraction. Opener, E. Treacher Collins, F.R.C.S.

Discussion will be introduced by Mr. E. Treacher Collins in an address of which the following is an abstract:

The capsular complications after cataract extraction are divided into: (I) Those resulting from adhesion of the capsule to the extraction scar; (II) Those resulting from opacity occurring in connection with the capsule.

Class I is again divided into: (*a*) an entanglement of a portion of the anterior capsule between the lips of the wound; (*b*) Agglutination of the capsule to the back of the wound by inflammatory exudate.

Delayed union of the wound and irido-cyclitis is shown to be a common accompaniment of the former, and glaucoma, apart from iritis, may result from the latter. How these complications may be avoided and what can be done to remedy them when they give rise to trouble is discussed.

Class II is subdivided under the following headings: (*a*) Retained lens substance. (*b*) Wrinkling of anterior capsule and new growth of cells lining it. (*c*) Adventitious fibrous tissue.

Finally, the results of opening the lens capsule by lacerating it with a cystotome and by removal of a portion of it with the capsule forceps are compared as regards the number of subsequent needling required, the number of cases in which vitreous is lost and the amount of vision which is ultimately obtained.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, AUGUST, 1905. VOL. XIV. NO. 8. NEW SERIES

Original Articles.

ON THE ORIGIN OF THE PAIN IN PHOTOPHOBIA AND THE BLEPHAROSPASTIC SYNDROME.

PERCY FRIDENBERG, M. D.

NEW YORK.

In consulting the literature of the symptomatology of eye disease, one is struck by the wide divergence in the views as to the nature and cause of a common manifestation of subjective discomfort. Nuel (in his chapter on diseases of the cornea, in Norris and Oliver's System) says that photophobia, or pain caused by the impinging of light upon the eye is scarcely explicable physiologically from a knowledge of the special functions possessed by nerves. Evidently the sensory fibers of the cornea are not excited by light. It would therefore seem to follow that the impression of light upon the retina is painful, which is in opposition to the theory that retinal excitation can not produce any other sensation than that of light. It is known, however, that when light is suddenly thrown into the eye which has, as it were, been tuned to dusk or darkness, an unpleasant sensation of dazzling is produced which may cause blepharospasm and actual pain. The light need not be so intense as to be at all dangerous to the eye. The matter may be understood, if we admit that pain is not strictly connected with special efferent nerves, but results from excessive excitation of any centripetal nerves. Thus, in section of a non-atrophic optic nerve there may be complaint of sudden sensation of light, so severe as to be "painful." Again, traumatic luxation of the globe produces a painful sensation of light which is insupportable, and similar to that felt when looking at the sun with the naked eye. It is suggested that in case of keratitis accompanied by photophobia superficial inflammation of the sensory nerves of the cornea provokes a hyperesthesia of the optic nerve, or rather of its central termination, just as light gives rise to a painful sensation in the optic nerve apparatus. Localization of this pain is very inexact.

Von Frey, attempting to prove the existence of special pain nerves, called attention to the fact that the higher sensory nerves can not conduct pain sensation. The optic nerve is incapable of painful stimulation, and he explained the pain of dazzling by the violent contraction of the sensitive iris. Nagel tested this view experimentally. If reflex contraction of the iris be suppressed (e. g., by the instillation of homatropin) there should, he argued, be no pain. And there is none, although, on account of the wide pupil, the dazzling is much increased, and looking at a bright surface, such as the sky, may be unpleasant and almost cause blepharospasm. Nagel agrees with von Frey as to the causation of photophobia by contraction of the iris, and Axenfeld accepts this view to explain the beneficial action of atropin in cutting short the photophobia of phlyctenular keratitis, even when there is no iritic irritation. In phlyctenula there is probably a combination of dazzling, from adaptation to darkness by tonic lid-spasm, with the original irritation of sensory nerves on the surface of the globe by ulceration or denudation of the corneal epithelium. In a recent article, Bjerrum considers the theory of Nagel and Axenfeld, and expresses the opinion that the contraction of the pupil has little, if anything, to do with the matter. He thinks that the pain is of a reflex nature, proceeding from the optic tracts to the sensitive tracts of the eye. The latter are in a hyperesthetic or painful condition; so that irritation of the optic nerve, usually unfelt, causes pain or exaggerates any pain that may chance to be present.¹ This view appears to him to be supported by the fact that the pain is relieved more promptly by cocain than by atropin, on account of the influence of the former on the sensory nerve endings.

Bjerrum's objections to Nagel's theory are an echo of the views advanced a generation ago by Handfield Jones, that photophobia in phlyctenular keratitis was the expressions of a primary hyperesthesia of the retina due to defective nutrition and a weakened constitution.

Bjerrum's hypothesis as to the real origin of photophobia seems to be by no means free from objections. If the pain is of a reflex nature, traveling from the optic nerve, how do we explain photophobia with corneal ulcer and hypopyon, in which there is scarcely any perception of light; in advanced cyclitis, where vision is almost

1. Contracted pupil in iritis and corneal irritation is explained by Spalitta and Consiglio as due to stimulation of vasodilating fibers in the trigeminal nerve, which causes an increased vascularity and greater volume of the iris. This may account for the beneficial action of the local abstraction of blood, as by leeching, on the reaction of the pupil to mydriatics in iritis with obstinate lysis and sluggish iris.

nil, and in amaurotic eyes? How can we explain the immediate cessation of "photophobia" on, let us say, the removal of a foreign body, or the cocainization of the surface of an abraded cornea.

Bjerrum's argument is that contraction of the pupil is not an agent, because eserin, which contracts the pupil much more completely than does bright light, causes less pain than dazzling, and perhaps none. But contraction here takes place gradually, and there is no more reason for pain than there is in the natural change of caliber in other ring-muscles. He also argues that photophobia is unilateral, whereas it should be bilateral, as both pupils contract equally. Here again we have confusion of the two forms of photophobia. That due to surface irritation may be purely unilateral, although often there is blepharospasm of both eyes in sympathy;² but light-dazzling is invariably bilateral. Bjerrum himself notes that in corneal abrasion the pain, instantly increased on the entrance of light into the affected eye, was not ameliorated by homatropin or atropin mydriasis. He does not appear to have realized that this was quite natural, inasmuch as pain was due to exposure of the abraded cornea. Bjerrum thinks that his theory of a reflex from the optic nerve to the sensitive tracts of the eye agrees very well with the fact that cocain is more effectual than atropin in relieving photophobia, as it diminishes the irritated condition in the sensory nerves. The confusion appears to me to lie in Bjerrum's view that the starting point of the irritation is in the perceptive mechanism of the eye, whereas it is evidently in the sensory tracts. He appears also to take it for granted that spasmodic closure of the lids has, as its one and only object, the exclusion of light; whereas, it also excludes the various other agencies mentioned above. It is well known that bright light can be perceived through the lids: yet in the case of a foreign body, intense illumination of the closed eye causes no pain, while opening the eyes even in the dark causes intense "photophobia." Nothing could show more clearly that it is exposure of the cornea and not the entrance of light-rays which causes pain. Bjerrum draws the analogy between the transfer of stimulation from the optic tracts to the sensory tracts, and the radiation from the ear, of pain and dysesthesia caused by loud, grating noises. This seems to me a faulty observation. In the case of painful sensations in the organ of hearing

2. In man the reflex wink for protection is always bilateral on account of the proximity of the two eyes and the resulting "common danger field," as danger threatening one eye threatens the other at the same time. Accordingly, man has so smoothed the inter-cerebral path of lid reflex that bilateral reaction, no longer unilateral, takes place (Wilbrand and Singer). This may also be applied to reflex lacrymation and hyperemia, and affords a better explanation of bilateral reaction, e. g., to a foreign body, than the vague term "sympathy."

we can hardly exclude the coöperation of the sensory nerves of the drum—in fact, we are compelled to hold the latter responsible almost entirely for this phenomenon; for such sensations of pain as Bjerrum refers to are caused by grating noises which cause the drum to vibrate excessively and irregularly, and the irradiation of this purely sensory stimulus is analogous to the reflex cough caused by irritation of the auditory canal or surface of the drum. Bjerrum's hypothesis seems to me weakened by this very analogy, which rather suggests a similarity of the reaction of the drum with that of the iris. Both structures represent diaphragms for the regulation of specific stimuli—so-called "adequate" stimulation—by sound and light, respectively. Both contain sensory fibers which in case of excessive stimulation, whether specific (by loud noises or bright light) or mechanical (tension, pressure or cutting) may give rise to radiation of pain to other sensory tracts.

Römer opposes the view of Nagel and Axenfeld as to the possibility of reflex contraction of the iris being the cause of photophobia. He says that such a phenomenon is without analogy in any other muscles, which never cause sensations of pain with even the most extreme physiological contraction. He appears entirely to overlook the fact that sudden muscular contraction, even when it is much less energetic than the gradual one, may be intensely painful; that is, in fact, the nature of cramp. Römer neglects the factor of adaptation, which is so important in the judgment of painful sensations. Consider the question of various degrees of heat, and how the painful burning is produced when heat is suddenly applied of a degree to which we can, after a time, readily accustom ourselves. Römer claims that bright light never causes pain, although it may cause unpleasant dazzling. I have shown above that this dazzling, however uncomfortable, is not necessarily connected with pain: but that both may occur with sudden changes of illumination. Römer cites the comparatively painless contraction of the pupil after the instillation of eserin as an argument against causation of photophobia in the iris, forgetting that it is by no means the degree of contraction alone, but its suddenness which is a criterion. Eserin causes the gradual contraction *ad minimum* in from five to fifteen minutes. Bright light, on the other hand, causes in the fraction of a second an intense and sudden stretching of the dilated iris, which can not yield to the muscle-strain quickly enough. It is this negative resistance to contraction, and not muscular action alone, which causes the pain of dazzling. Römer further cites as an argument against the iris theory the fact that instillation of eserin in phlyctenular keratitis does not increase

the pain, overlooking the fact that the pain in this case depends on corneal irritation, has nothing to do with contraction of the iris, and is "photophobia" by courtesy only.

Römer further experimented by exposing the eye to bright light a short time after he had instilled eserine and was surprised that the dazzling was much less marked, although the pupil became contracted to less than pin-head size. Here again he overlooks the fact that the pupil had begun to contract under the myotic before it was exposed to light—that the fibers of the iris were under contraction to which they were yielding; and in this way prepared for a rapid reflex contraction with light.

The above citations appear to show one thing conclusively, and that is that two phenomena have been confused—viz., dazzling and pain. This may explain the conflicting statements of observers, some of whom claim that photophobia is painful, and others that it is not so. In some instances the experiments were made on the eyes of children afflicted with phlyctenular keratitis, as typical examples of photophobia, while others reported the results of observation of their own or other peoples' normal eyes under mydriasis, myosis, and in various stages of adaptation to darkness. Photophobia due simply to excessive stimulation of the retina and without coincident disease of the surface of the globe is seen in its purest form in asthenopia. Of this form Noyes says: "Intolerance of light is only less frequent than headache. It varies in every degree from slight discomfort at any unusual glare, and it may increase to the most tormenting distress. In extreme cases the patient is apt to be adjudged to have acute retinitis." Haskett Derby, Dyer, and R. H. Derby cite similar symptoms of asthenopia. In one case the intolerance of light had become so excessive that even the reflection from a white handkerchief or cloth caused great pain.

Let us now examine the symptoms of "light-dread" more closely, and we shall, I think, be convinced that a misnomer is the cause of these conflicting theories. As a description of a physiological process "photophobia" is, to my mind, as meaningless as "myopia." The condition we find associated with blepharospasm and lachrymation, in the most varied forms of superficial irritation, is not fear of light so much as fear of opening the eye, fear of moving the globe or lids—the instinctive desire to protect the inflamed, irritated or injured surface against all external agencies, such as cold, wind, dust or mechanical agencies of any kind. The protection of the globe by hiding the head in the hands, by burrowing into the pillows or by tightly closing the lids is entirely natural. The irri-

tation which causes these instinctive and automatic acts for the protection of the surface causes at the same time a reflex contraction of the pupil as a protection to the depth. These two symptoms are, however, concomitant, and have absolutely no pathological interdependence. That the effect of light, as such, has nothing to do with the case is shown by the fact that with a foreign body on the cornea there is just as much photophobia when we try to open the eye in the dark as when the attempt is made in a brilliantly lighted room. On the other hand there may be no photophobia at all if the cornea be anesthetized and the pupil incidentally enlarged by cocaine, although now more light enters the eye and we should expect the "light-fear" to be exaggerated. Eucain, which completely eliminates the iris factor, brings about a similar result.

Real light-dread, independent of superficial irritation, manifests itself in quite another way. The classical example is the discomfort felt on exposing the eyes to bright light after they have adapted themselves by dilatation of the pupil to comparative darkness. The sudden spasm of the pupillary sphincter causes an aching, colicky pain, which, by analogy with similar conditions in other muscular structures, I should infer to be due to the sudden stretching of the iris tissues, and which is relieved in a second or two as the pupil contracts.³ Here also we instinctively protect the eye from light, and from light alone; and there is a corresponding difference in the protective mechanism. It is almost invariably by shading the eyes with the hand, by looking away from the light, or pulling the hat brim over the brows—rarely by voluntary closure of the lids except in the form of frowning or blinking (winking, plus contraction of the palpebral fissure), and never as a reflex lid-spasm.⁴ This true photophobia is seen when normal eyes are exposed to bright sunlight or unusually brilliant artificial illumination, such as the glare of a furnace or the rays of a search-light.

The most intense photophobia is caused instantly, in its most exquisite form, by the entrance of a cinder or other similar foreign body into the eye. The lids close spasmodically the very moment the foreign body touches the globe, and tears stream from the eye

3. Hering explains painful dazzling by the sudden accumulation in the visual substance of the retina of dissimilation products due to intense light. These products irritate the ciliary nerves. When the anterior section of the globe is inflamed, small amounts of these products, e. g., produced by ordinary daylight, may be sufficient to cause pain in the already irritated ciliary nerves. This theory is not supported by any proof that dissimilation products are diffusible. The rapid regeneration of the visual substance speaks against such a view.

4. According to Wilbrand and Sanger (*Neurologie d. Auges*) dazzling produces merely a narrowing of the lid fissure, with a change from the S-shaped curve to a horizontal stereopic slit, as in myopia and in sighting.

and into the nose. There is every evidence of severe irritation. Are we to assume that in less than a second the sensitive tracts have become intolerant to light? This would presuppose a lack of physiological purpose in a reflex process. Nothing could be gained by Nature in excluding light under these circumstances. The object of lid-closure sufficiently energetic to immobilize the globe is, however, manifest and evident as a protection against pain and further injury to the irritated eye.

In conclusion, I believe that we must distinguish two classes of photophobia, which differ absolutely in cause and mechanism; although both may be accompanied by similar external and superficial manifestations:

First.—Specific, idiopathic, primary, retinal photophobia, representing a reflex from the optic nerve to the sensory branches of the trigeminus or ciliary nerve, or to the motor nerves of the eye and lids, and due to hyperesthesia of the nerve filaments engaged in light-perception, or to excessive stimulation of normal structures. The discomfort in these cases is caused by intense "specific" stimulation of the retina; actual pain, by *iris cramp*. This form is that observed in normal eyes suddenly exposed to glaring light, as in retinal asthenopia, neurasthenia, hysteria, and perhaps in snow-blindness.

Second.—Secondary, symptomatic, superficial, corneal photophobia, due to hyperesthesia of the sensory nerve terminals in the skin of the lids, cornea, conjunctiva, and ciliary body, as well as in the mucous membrane of the nose,⁵ in the maxillary antrum, teeth, and representing the reflex from the sensory fibers of the trigeminal nerve, and other nerves, to the motor branches of the facial. In this class of photophobia we have to deal with corneal or ciliary pain, absolutely independent of any process in the iris or retina. The most frequent causes of such pain are the irritation of the superficial nerve endings in abrasion or foreign body in the cornea, corneal ulcer, sympathetic iritis, cyclitis, ciliary wounds and so forth. Of this form, which I shall designate as pseudo-photophobia, or the blepharo-pastic syndrome, phlyctenular keratitis is a characteristic paradigm, and tonic blepharo-spasm the clinical expression.

⁵ The irritation of the nasal mucosa by actual injury, or, perhaps more strikingly, by irritating vapors such as ammonia, produces this form of photophobia, which manifestly can have no relation to any action of light nor any connection with optic nerve reflexes.

ZONULAR CATARACT, WITH IRIDEREMIA. EXTRACT-
TION OF THE LENS, WHICH HAD BECOME EN-
TIRELY OPAQUE, IN THE CAPSULE, WITH
MICROSCOPIC EXAMINATION.

By FRANK N. LEWIS, M.D., and EDGAR S. THOMPSON, M.D.

Surgeons to the Manhattan Eye, Ear and Throat Hospital.

NEW YORK.

(Illustrated.)

The patient was a man 44 years of age, who was kindly referred to me by Dr. E. H. Stevens of Laceyville, Pa. He was in fairly good health and had worked at times as a farmer and in boiler-making shop, but had never been able to do much on account of poor vision.

The family history was, as far as could be learned, devoid of anything that had a bearing on the condition of the patient's eyes. His father and mother never had had any trouble with the eyes. Five sisters also had, as far as he knew, no trouble with the eyes. There was no history of the patient ever having had convulsions, rachitis, syphilis, and there was nothing about his teeth or otherwise to indicate an inherited taint.

At birth his eyes were said to have been peculiar. He was "marked," by some fanciful effect on his mother during pregnancy, of a comet. All his life his vision had been poor, thought to have been shortsighted.

Fifteen years ago the vision of right eye became much worse, and eight years ago the left eye also failed. At this time a doctor, who examined his eyes, said that he had cataracts. Nothing has ever been done for his eyes and he never used glasses.

He was admitted to the Manhattan Eye, Ear and Throat Hospital and on examination the following condition was found: In each eye mature cataract and irideremia. In the right eye there was an hypermature or Morgagnian cataract, large milky-white, with small, dark-brown nucleus floating about as the head was moved in different directions. There was perception of light but in only part of the field, the lower and nasal side being deficient.

In the left eye the cataract was of a darker color, and apparently of firm consistency, with many irregular, dense, opaque spots. It was of about the normal size of the lens, fully mature, but showed no indication of being hypermature. From the history of the case and with the appearance of this cataract, it was thought that there had been a congenital or, very likely, a zonular cataract, with this later in life becoming a fully mature cataract. The

subsequent progress of the case with the microscopic examination proved this opinion to be correct. The left eye had perception of light in all parts of the field. The irideremia was the same in both eyes. It was practically a total irideremia or as nearly total as I presume is ever found. In looking at either eye from the extreme opposite periphery, a narrow strip of red reflex could be seen around the lens and what seemed to be simply the root of the iris. As both lenses were about normal size and no iris could be seen in looking at the eye except from the opposite side, the rim of the iris must have been very narrow. The tension of each eye was normal.



Zonular cataract with congenital radiating opacities.

Eyes of this character, I believe, are usually not favorable for operation. Whatever may be the cause of irideremia and congenital cataract, or of zonular cataract, whether lack of development, malnutrition, rachitis, convulsions, etc., these eyes do not show the vitality or recuperative powers after operation that we find in other eyes.

The indication in this case was clearly to give the patient the chance of a good result by removing the cataract. The left eye was the more favorable for operation, the lens of this being just mature and, seemingly, of firm consistency, and the visual field good. It seemed best to remove the lens in its capsule if possible. On Oct. 29, 1904, under cocain, a section upward was made and then the lens, in its capsule, was removed by wire spoon. A

very slight amount of vitreous followed the extraction and the wound was left in good condition for healing.

No unfavorable signs followed in the healing of the wound for the first few days and it was well closed until on the seventh day after the operation, when there was a small presentation of vitreous at the temporal side of wound. Under bandage this entirely disappeared, and when the patient left the hospital there was only slight redness of the eyeball, the wound firmly healed, tension was normal and vision of this eye 20/100 with + 14 D. There was a thin membrane extending across, which probably was a new formation, as it could not be the capsule of the lens, as the microscopic examination showed that the entire capsule had been removed with the lens. There were a few opacities in the vitreous, but otherwise nothing abnormal was discovered. There was no coloboma of choroid. With the vision obtained the patient was greatly pleased, and it seemed best to let well enough alone. His vision may be even better later without further treatment, and, while the membrane was quite thin, a needling of this might have given, at this time, better vision, it seemed unwise to subject an eye of this character to the risk of another operation.

The right eye was operated on Nov. 15, 1904, sixteen days after the operation on the left.

As the section was completed, the patient squeezed the eye in such a way that he ruptured the capsule and forced out the fluid lens material with the small brown nucleus. No vitreous followed, and no attempt was made to remove the capsule.

This eye made a good recovery as far as the healing of the wound was concerned, but, owing to the capsular membrane remaining, to quite dense vitreous opacities and possibly to some pathologic changes of the retina or choroid which could not be seen, the vision resulting was only 2/200. This eye, too, had very slight redness remaining and normal tension when the patient left the hospital, December 1, to return to his home in Pennsylvania.

The result of operation on the left eye has been quite satisfactory so far and it would seem likely that it would remain as at present, or even that the vision may improve, but, on the other hand, this eye may later show some unfavorable symptoms.

One part of this case which seems of especial interest is the pathologic examination of the lens in its capsule, the sections showing the characteristic appearance of zonular cataract.

I am indebted to Dr. Edgar S. Thompson for this and his re-

port is herewith given, with a micro-photograph of section of the lens.

Pathologic Report.—The lens was hardened in van Gehuchten's fluid, embedded in celloidin and sections stained with hematoxylin, and by van Geison's method. Equatorial sections were made of the posterior half and sagittal sections of the anterior half. The lens capsule was found intact. The entire lens had undergone cataractous degeneration, though of very different degrees in different parts. Midway between the lens center and the capsule was a zone of advanced degeneration, with marked separation of the fibers, extending all around the nucleus and occupying the usual position of the opaque zone in the ordinary variety of lamellar cataract. The separations were filled with granular detritus and areas of closely-packed spheres of Morgagni. No normal fibers were found bounding the separations nor in the cortex of the lens, but all showed evidences of shrinkage, irregularity and cross striation. Immediately beneath the capsule the cortex was converted into a pultaceous mass, all trace of the original fibrillar struction being lost. There was a second "zonular" area deeper in, and the nucleus was sclerosed and split by a three-armed fissure corresponding to the lines of junction of the fibers. Some formation of spheres was found in this fissure. From the larger zonular area to the capsule, radii of more advanced degeneration extended on all sides, about twelve in all. These radii were composed of spheres of Morgagni and fiber detritus and were so sharply defined from the more normal fibers surrounding them that it is evident that the patient had originally a rather uncommon form of congenital zonular cataract, upon which finally total cataract supervened. Zonular cataract with radii is rather an uncommon form, and when radii are mentioned by most authors they are spoken of as occurring in groups of two or three only. Axial opacities are much more common. Liebreich (quoted by Norris, *Syst. of Dis. of Eye*, Vol. IV, p. 334) does not figure radii in his drawings. Spicer (*Trans. Oph. Soc. Unit. Kin.*, 1892, Vol. XII, p. 108) pictures a case with three radii.

Fuchs (*Dis. of the Eye*, p. 403) says merely that "numerous other forms (than simple lamellar or circumscribed stationary lenticular opacities) are known, all of which, however, occur so rarely that they do not need to be minutely described here." As these forms are usually symmetrical it is probable that a like condition existed in the fellow eye of the present case. Such opacities commonly coexist with other congenital malformations, as was the case here.

A CASE OF DISCOLORATION OF THE CORNEA BY BLOOD PIGMENT, AND ONE OF HEMOR- RHAGE INTO THE CORNEA.*

BY O. F. WADSWORTH, A.M., M.D.

PATHOLOGICAL EXAMINATION BY F. H. VERHOEF, A.M., M.D., BOSTON.

(Illustrated.)

Discoloration of the cornea by blood pigment appears to be comparatively rare. Indeed, in this country only three cases, so far as I am aware, have been published, and in only one of these was there a microscopic examination. It may be worth while, therefore, to put another case on record.

Aside from its comparative rarity, the condition is of interest because of the various interpretations the deposits in the corneal tissue received before their true nature was determined, because the path by which the pigment finds its way into the cornea is still not definitely settled, and because of its strong resemblance at a certain stage to a lens dislocated into the anterior chamber. Extensive hemorrhage into the anterior chamber appears to be a necessary condition precedent, yet there is a vast difference between the frequency of hemorrhage into the anterior chamber and the rarity of this condition of the cornea.

The first case reported was one by Baumgarten, in 1883.¹ He found, scattered throughout the substance of the cornea, numerous small, strongly refracting, sharply bordered, colorless, rodlike, oval or round bodies. Although these did not grow on various culture media, did not stain, and the corneal tissues showed no indications of inflammation or degeneration, he was disposed to believe them probably some low organism. Specimens were sent to Leber and Koch. Leber gave no definite opinion as to the nature of the bodies, but was not disposed to accept Baumgarten's conclusion. Koch, on the whole, considered the bodies crystalloid and the remains of an earlier exudation.

Five years later Lawford² reported a second case. He found the granules to stain with eosin, but not with hematoxylin.

Vossius,³ in 1889, reported two cases. He concluded there had been direct hemorrhage into the cornea. He demonstrated that some of the deposits in the cornea, which gave an iron reaction, were hemosiderin. Others, and the more numerous, he thought

* Read before the American Ophthalmological Society, May 12, 1905.

1. Arch. f. Ophth., vol. xxix, 3.

2. Transactions Ophth. Soc. of the United Kingdom, vol. viii, p. 60.

3. Arch. f. Ophth., vol. xxxv, p. 2.

were probably fragments of corneal fibers which had undergone hyalin degeneration. Leber, in an appendix to Vossius' article, upheld the view that these latter granules were the product of fibrin coagulation.

Weeks⁴ reported a case in 1893. He supposed the granules in the cornea to be hematin, deposited from soluble hemoglobin which had entered from Fontana's spaces. He said there seemed to be a faint reaction from tests for iron. In 1895 Treacher Collins⁵ reported nine new cases, and from consideration of these and those previously published maintained the discoloration to

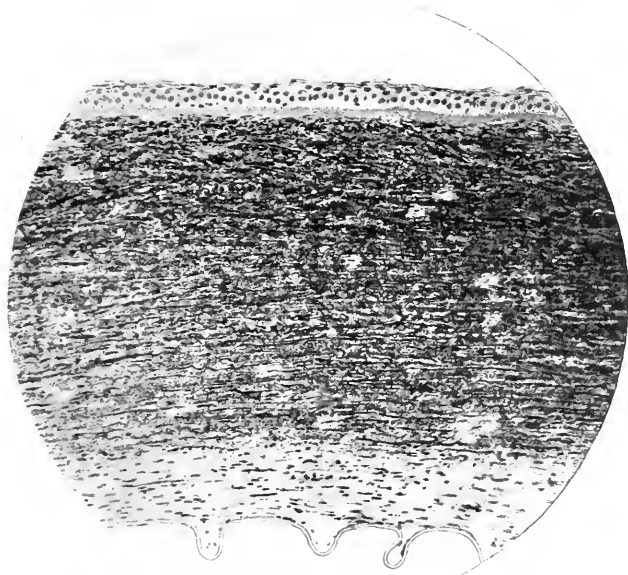


Fig. 1.—Enormous deposition of hematoidin particles in corneal stroma and spaces. Case 1. Phosphotungstic acid, hematoxylin and lithium carmin. Photo. $\times 105$.

be due mainly to hematoidin granules, hemosiderin being present in some cases also. There was in all hemorrhage into the anterior chamber. He agreed with Weeks that the material probably found its way into the cornea as soluble hemoglobin. But he thought it more probable that the hemoglobin entered by diffusion through the membrane of Descemet, because the usually increased tension points to obstruction to the exit of fluids at the iris angle, and also because the discoloration appears at the center of the cornea as soon as elsewhere.

4. Reports of the N. Y. Eye and Ear Infirmary. Part I.

5. Trans. Ophth. Soc. of the United Kingdom, xv.

Since Collins' paper nothing of importance has been added to our knowledge of the subject. It may be noted, however, that Frank⁶ states that similar granules are also found in trachoma, even where there has been no hemorrhage.

In all cases there seems to have been extensive hemorrhage into the anterior chamber first: in many following a wound, which not always has involved the cornea; in many following late after detachment of the retina or other deep affection, either spontaneous or the result of a blow. The whole cornea appears to be involved at first, but after a few days the periphery clears and complete absorption may take place in some months or after a year or two.

The granules have been found in some cases pretty evenly distributed throughout the whole thickness of the cornea; in some the posterior layers have been free from them, in others they have been most numerous in the posterior layers, and in one case at least they were seen between the membrane of Descemet and the corneal tissue. How the soluble hemoglobin from which they are deposited enters the cornea—through the wound, from Fontana's spaces, or through the membrane of Descemet—is not definitely settled. In many cases a wound surface can not have offered the path. Collins' idea, that it enters by diffusion through the membrane of Descemet seems to have met the more general acceptance. The weight of evidence is overwhelmingly against direct hemorrhage into the cornea. The case here to be reported offers no points to aid in the determination of this question.

The color of the opaque cornea has been variously described as grayish-yellow, greenish, greenish-brown, greenish-black, rusty brown and reddish-brown. And the tint changes with time.

Many observers have spoken of the close resemblance the condition bears to a lens dislocated into the anterior chamber, and the operation has been more than once undertaken for removal of the lens. Lawford said all who had seen his first case had thought it one of dislocation of the lens. This, as will be seen, was the mistake which I made.

CASE 1.—*Discoloration of the Cornea by Blood Pigment*.—A boy of 12 was struck by a stick on his right eye. The next day there was ecchymosis of the conjunctiva and a horizontal wound in the cornea, about the junction of the middle and lower thirds, extending nearly to the edge on either side. There was a small prolapse of the iris through the outer third of the wound, some blood in the anterior chamber, apparently opacity of the lens. The pro-

6. Inaug. Diss. Rostock, Jahresbericht, 1902, p. 211.

lapsed iris was excised, and also what seemed a bit of vitreous at the inner end of the wound. Atropin. The next day the eye was quiet, the wound closed, the pupil fairly large. The following morning he had considerable pain, relieved by sleep, and on the day after, when I next saw him, the anterior chamber was full of blood. Three days later he had had no more pain, the wound seemed well closed, and he went home.

After a month he returned, having had no pain and used no atropin. There was considerable congestion, not specially deep; the wound region was vascular, forming a band across the cornea

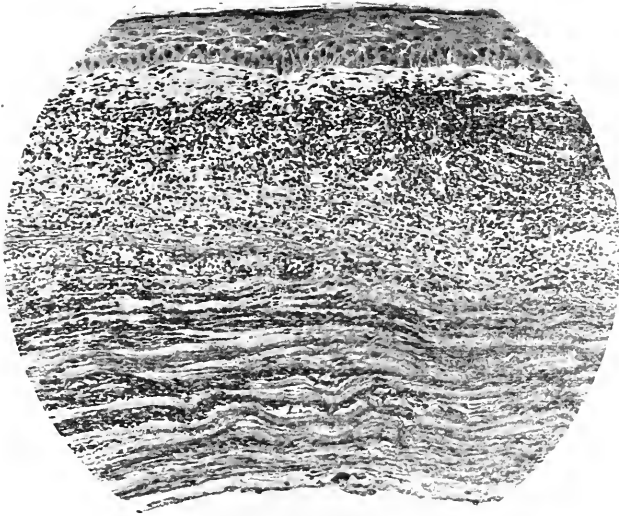


Fig. 2.—Extensive interstitial hemorrhage into cornea. Case 2. Hematoxylin and eosin. Photo. $\times 128$.

2 $\frac{1}{2}$ mm. wide, with smooth surface, slightly rounded forward, reddish-gray. Below this band the cornea was grayish. Above it the cornea was smooth and reflected the light regularly. There was a narrow, clear zone some 1 $\frac{1}{2}$ mm. wide at the periphery, through which the iris could be plainly seen, nearly normal in color and striation. The area within this zone appeared opaque, gray, very slightly tawny, melting below into the opacity of the wound region. Its edge all around above the wound was sharply defined, and with oblique light showed a distinct rounding backward toward the iris. T. slightly—. I believed I had to do with a lens in the anterior chamber and advised its removal.

The eye was not examined again until the boy was under ether. Then there was something in the appearance which led me to doubt whether the opacity was not after all in the cornea. But it seemed better to go on. A section was made at the upper edge of the cornea. The knife, as it passed through the anterior chamber, would have transtixed a lens lying there. Gentle pressure brought nothing. Iris forceps drew out a bit of iris, which was cut off. A scoop brought only a very small amount of tawny substance, doubtless the remains of blood clot. A small protrusion of vitreous was cut off and the eye bandaged. Four days later the congestion was less except in the neighborhood of the section. The opacity in the cornea was darker and of a slightly greenish tint. A narrow rim of cornea below the wound had become transparent.

Eighteen days after the operation congestion was somewhat diminished, but photophobia continued. The cornea had gradually become less dark, rather a stretch of imagination being required to call it greenish; the clear edge was a little wider. Under all the conditions existing enucleation seemed advisable and was done.

Pathologic Examination.—The globe was hardened 24 hours in formalin, frozen, and sectioned in a vertical antero-posterior plane. Diameters of globe: Antero-posterior, 25.5 mm.; horizontal, 24 mm.; vertical, 23.5 mm.

The cornea, 12 mm. in diameter, shows two opaque linear scars, 6 mm. apart, running horizontally across it, but ending some distance from the limbus on either side. The upper scar, which is more sharply defined than the lower, corresponds to the incision made at the first operation. Between the scars but not reaching them anywhere is a well-defined oval area, 8 mm. by 5.5 mm. in size, stained yellowish-brown. The surface of the cornea is perfectly smooth here and the stroma is not opaque, though less transparent than a normal cornea. Except at the sites of the scars the cornea is elsewhere clear. On the nasal side a few minute, deep-seated vessels approach the lower scar from the limbus.

The iris is caught in the corneal wound and in places is torn away from the ciliary body. The lens is absent and the lens capsule seems to be caught in and stretched between the two scars, leaving a small anterior chamber filled mainly with fluid. The vitreous body is clear, but is almost completely fluid. The ciliary processes are drawn forward and compressed. At one place, where a small hemorrhage has taken place from them, they are apparently covered by a slight exudate. On the nasal side the choroid and ciliary body show a white scar about 1 cm. in

length. The choroid is otherwise normal, as are also the sclera, retina, and optic nerve.

Histologic Examination.—Celloidin sections were made vertically, taking in the entire cornea and passing through the middle of the discolored area and the scars. Horizontal sections were also made which included sufficient of the cornea to show the margin of the discolored area on the temporal side.

The cornea at the periphery is normal except that above and below the stroma contains a few blood vessels, which make their way toward the corneal scars. The edges of the cataract incision are sharply defined, but are separated from each other by newly-formed cellular fibrous tissue. Posteriorly, the edges are further apart than they are anteriorly, and the scar tissue becomes continuous with a thick fibrous membrane, which is connected with the lens capsule above and with the iris below at the site of the old wound. The latter is filled up with tissue similar to that in the cataract incision, but the line of demarkation between scar tissue and corneal stroma is not so sharply defined. The scar tissue here is continuous with the iris, which has been incarcerated in the wound, and with the fibrous membrane just referred to. The latter thus extends from wound to wound and marks off a shallow anterior chamber. At the margin of the old wound, Descemet's membrane is folded and reflected over the surface of the iris.

Between the two scars, the corneal lamellæ are greatly wrinkled in the anterior three-fourths of the cornea, but there are no new vessels and no formation of new tissue. In the posterior one-fourth, however, the stroma has been replaced by, or converted into, ordinary fibrous connective tissue, which is vascularized by vessels from the scars. Here Descemet's membrane is thrown into numerous folds, many of them quite large, which are filled up with delicate connective tissue.

The discoloration of the central portion of the cornea, seen with the naked eye, is found under the microscope to be due to an enormous deposit of granules which in unstained specimens are light yellow in color. These granules fail to give the iron reaction, stain in eosin and in picric acid, but react most intensely to Mallory's phosphotungstic acid hematoxylin, which stains them a dark blue. This latter stain seems to be practically differential for the granules, which are evidently hematoidin, as after formalin fixation it colors scarcely anything else except red blood corpuscles, in fact, nothing else for which the granules could be mistaken. The nuclei are brought out by a preliminary staining

in Orth's lithium carmin. This method shows that the deposit is in the form of fine and coarse granules resembling various kinds of bacteria, but near the surface of the cornea the particles are especially large and often take the form of small plates, which seem to be composed of parallel rods fused together. The particles occur both within the lamellæ and within the corneal spaces, where they seem always to lie inside the corpuscles. While under the low power the distribution of the particles appears quite uniform, under the high power it is seen that there are numerous small, well-defined areas in the affected region which contain almost no deposit. The margin of the deposit is sharply defined, even under the high power. It does not reach either of the corneal scars and near the latter appears no different than in the clear cornea on the temporal side.

Sections stained differentially for iron in potassium ferro- and ferricyanid show relatively little hemosiderin in the discolored area, although almost all of the corneal corpuscles here contain a certain amount of it. There is a noticeable deposition of hemosiderin in the vicinity of Schlemm's canal, but otherwise the clear portion of the cornea is free from it, and there is no pigment of any kind in Bowman's or Descemet's membranes. Within the anterior portion of the ciliary body there is a considerable amount of hemosiderin and some of it is found also bordering on the sub-choroidal lymph space throughout the uveal tract, but the retina, including the pigment epithelium and the pars ciliaris, which are most apt to be stained in siderosis bulbi, are free from iron pigment.

The iris has been torn away at its root above. Below, its pupillary margin is caught in the old scar, as already mentioned, and from the latter a thick, fibrous membrane grows out over the surface of the iris for some distance. Posteriorly, the iris in places is adherent to the lens capsule. A considerable portion of the iris stroma is comparatively normal, but is infiltrated to some extent with chronic inflammatory cells, among which mast cells are especially numerous. Both the iris and the fibrous membrane with which it is connected show a number of interstitial hemorrhages and contain a large amount of pigment, which gives the iron reaction, and which fails to bleach by the method of Alfieri. This pigment, evidently hemosiderin, becomes less and less abundant as the corneal scars are approached, and clearly has no direct relation to the similar pigment in the discolored area in the cornea. This is all the more certain because the hemosiderin is scattered uniformly throughout the latter area and is no more abundant near the scars than at the margin elsewhere.

All that remains of the lens is its capsule and an insignificant amount of cortical matter enclosed in it. In places the capsular epithelium has undergone proliferation. Back of the capsule and fibrous membrane there is a small amount of blood, probably resulting from the cataract incision. The hemoglobin is more or less completely dissolved out of many of the corpuscles, while mixed in with them are numerous granules (hematoidin) similar to those in the cornea. The filtration angle is blocked above by the ciliary body, which has been pulled forward over the spaces of Fontana. Below it is free. The ciliary processes are everywhere carried forward; the ciliary muscle is normal. The pars ciliaris retinae posteriorly has in places undergone proliferation. The choroid, retina, and optic nerve are normal.

Diagnosis.—Old, healed, penetrating wound of cornea, with incarceration of iris. Intraocular hemorrhage. Circumscribed deposit of hematoidin granules in corneal stroma (hematogenous pigmentation of cornea).

CASE 2.—*Hemorrhage Into the Cornea.*—This second case is reported mainly to illustrate the widely different condition existing when there is true hemorrhage into the cornea.

A man of 45 years of age was admitted to the Infirmary at the end of last August, with central ulcer of the left cornea and hypopion. A week later, other treatment having proved unsuccessful, the cornea was incised at the lower and outer edge, and the wound was reopened daily for three weeks. The middle of October he was discharged with a large central leucoma.

In January he was readmitted. Three days before, while lifting one end of a piano, external objects suddenly appeared red to him. There was lachrymation of the left eye, but no bleeding. Soon after he began to have pain in eye and temple. On entrance, there was considerable congestion of the conjunctiva, moderate catarrhal secretion. Occupying the center of the cornea was a triangular, bright red area, measuring 6 by 9 mm., with fairly regular outlines. Its surface was uneven, but apparently not broken, the central part slightly elevated. Appearing generally of pretty uniform color, oblique light showed a number of smaller, partly confluent areas of somewhat different degrees of brightness. A number of vessels passed into this area from the limbus, specially from below. The rest of the cornea was hazy, but allowed the iris to be seen. Five days later the lids became red, the conjunctiva more congested, the tension increased, and there was pain severe enough to cause much nausea. Two days later the eye was enucleated.

As the red area had meanwhile continued quite bright, it seemed evident that besides hemorrhage, there were numerous permeable blood vessels in it, although no individual vessels could be made out. This was confirmed by the fact that the area became much less bright on removal of the eye.

Pathological Examination.—The eye was hardened in formalin, and after freezing sectioned in an antero-posterior horizontal plane. The globe is normal in size and shape. The cornea shows a central, somewhat rounded, opacity 6 mm. in diameter, which is stained unevenly reddish brown. The iris is united with the cornea throughout. The lens is in situ 3 mm. behind the cornea and the intervening space is free from coagulum. The vitreous humor is normal, as are also the retina, choroid and optic nerve.

Microscopic examination shows that the greater part of the cornea has been replaced by dense fibrous scar tissue in which much of the iris has been incorporated. At the periphery, however, the corneal stroma is comparatively normal, although even here a superficial growth of vascularized connective tissue extends over the surface of the cornea from the limbus to the central scar. The scar tissue is greatly congested and in the center is extensively infiltrated with extravasated blood. The differential stain for iron brings out only a few cells containing hemosiderin and these were no doubt present previous to the hemorrhage. Almost no hematoïdin granules are to be made out.

The subconjunctival tissue of the limbus is congested and shows a marked chronic inflammatory reaction. From the posterior part of the ciliary body a considerable exudation of lymphoid cells is taking place and there is also some proliferation of the cells of the pars ciliaris retinae. The lens is normal and otherwise the eye shows nothing of importance.

Pathological Diagnosis.—Large interstitial hemorrhage into corneal scar.

A NEW INSTRUMENT: TO SHORTEN THE SUBJECTIVE BRANCH OF REFRACTION AND TO MAKE IT MORE ACCURATE.

J. N. RHOADS, M.D.

Instructor in the Ophthalmological Department of the Polyclinic Hospital and College for Graduates in Medicine.

PHILADELPHIA.

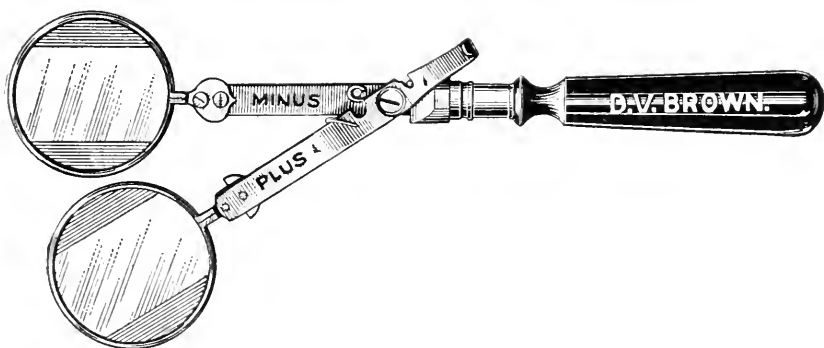
(Illustrated.)

I presume it is the custom of most refractors to use minus and plus lenses alternately before a patient's eye when nearing the

point of correction to see whether he will choose a weaker or a stronger glass. Such, at least, was the method I was taught at the Polyclinic Hospital years ago, and, moreover, such is the method being taught there to-day.

It was while as an assistant at the hospital that I first felt the want of a lens holder in subjective refraction. When I would want a pair of plus and minus 0.25 lenses they could not be found. One or both might be in use, that is, might be in the trial-frame, or they might be in use by some brother assistant or student. The truth was, as far as the hospital was concerned, they were eternally misplaced.

One day I thought of using a pair of hemostatic forceps to hold the two lenses, and upon trying it found that it answered well enough, but the rings of the shanks were in the way. Then I tried riveting the handles of the two lenses together, but I found them



too short, consequently my hand would continually get into the patient's range.

I then had constructed by D. V. Brown the instrument as shown in the cut. This instrument is six and one-half inches long, and contains a plus and minus lens of the same relative strength, that is, a plus 0.50 Sp., and a minus 0.50 Sp., or minus and plus quarters. The long straight shank has the minus lens attached to it and the short shank carries the plus lens. The short shank is movable and is held in place by a spring, but when its upper short end is pressed upon it rises up parallel and directly over the long shank, and consequently the lenses neutralize each other, thus making a third glass. I also use a pair of cylinders fastened to the same kind of shanks, which neutralize themselves in the same manner. The axes of the cylinders, as seen in the cut, are placed parallel with and straight out from the shanks; they might, however, with equal advantage, be placed at right angles. The lens

rings I have made one inch and a quarter in diameter. Every test case of lenses should contain at least two sets of spheres and two sets of cylinders, i. e., one pair of half diopters and one pair of quarter diopters of both spheres and cylinders.

After using and testing this instrument for a long time, I believe it to be just a little less important than Jackson's cross-cylinder. It shortens the time consumed in refraction exceedingly and renders the result far more accurate. Indeed, after a case has been shadow-tested, it rarely takes over five minutes with each eye to finish the refraction by this method. Really, I am sometimes ashamed to take the patient's money, so quickly is the refraction completed. Owing to the short time it takes with this instrument and system, nervous and even illiterate women answer promptly and correctly, and thus are not tired out and sent home to their beds for a couple of days, as is quite often the result by the generally used method.

This instrument has caused me to entirely change my method of case-testing. It has been my custom—and it seems to be the custom now in general use—to hold a minus and plus lens in my fingers before a patient's eye alternately and ask: "Which is better, this or this?" From the nature of the question the patient is bound to answer: "This." Could anything be more indefinite? The patient instantly forgets which *this* he means, and the refractor is only a shade less dumb.

With this instrument in my hand I now say to the patient: Fix your eye on the first letter of the lowest line you can read, for I am going to place three glasses before you and I want you to tell which is best—*first, second or third?* It will be seen that the question is definite and that the answer can not help but be. I do not always ask them to take the first letter in the lowest line they can read; sometimes I have them take the last, or a special one in the line, but I invariably have them fix their attention on a certain letter; in fact, I occasionally restrict their attention to a certain part of a letter, as for instance the cross of an A. If the patient, having been examined before and remembering his former catechism, begins to answer: "The first is better, Doctor," or "this is better," or any other remark, I quietly but firmly break in and say: Answer only *first, second or third*, please, and we will progress much faster and obtain better results. Even when only two glasses are used, or when using the cross-cylinder, there is no earthly reason why a refractor should not say: "Which is better, *first or second?*" And make the patient strictly confine his answer to *first or second*.

I make it a habit to use this instrument always one way, that is

to say, that I always begin by holding the plus before the eye first, and then minus and then neutralize. Sometimes, instead of neutralizing I just let the minus glass pass below the trial frame and ask: Third? The patient never seems to realize the difference between that and the neutralized lenses. Then, too, I often use only the minus and plus alternately at first, and use the third or plain glass when I am on the "knife edge." If I suspect my patient is trying to lead me astray, of course I vary my movements. It is a good thing, however, to have and to stick to a regular system.

It is surprising how much quicker one can come to accurate results by using this lens holder. Its long handle enables one to keep out of the line of vision, and so quickly can one change from minus to plus or neutralize that the patient can instantly and accurately judge which is best.

If there are any left who do not use the cross-cylinder test, they can much shorten their work, and I humbly add, make it decidedly more accurate, by using these cylinders. I frequently use two cylinders in a hemostatic forceps when I want to use higher ones than I have on my instrument, but, of course, they can not thus be neutralized, yet, as I stated above, the third one can be made by passing the lens beyond the eye.

It seems almost unnecessary to show how the instrument acts, or rather how it brings the result, as, except for the third glass, it acts, of course, the same as though they were held in the fingers. We will suppose that a given eye needs a plus 1.25 Sp. to correct it, and you have in the testing frame before it a plus 1.50 Sp. This is evidently a plus 0.25 D. too strong. Now, if you place the half diopter sphere before him and ask: "Which is best, *first* (+ 0.50 Sp.), or *second* (— 0.50 Sp.), or *third* (plano)? He will instantly choose *second*, because it is self-evident that the plus 0.50 Sp. made it three-quarters of diopter too strong, while the minus 0.50 Sp. made only an error of a quarter of a diopter. The plano, it is apparent, makes no change. Continuing the examination by reducing the lens a quarter you have in the trial-frame his exact correction and he is unable to choose between the *first* or *second*, as both make it worse, but at once accepts the *third* or neutralized glass, which, as will be understood, makes no change.

By this method of refraction one need never ask leading questions. The fact is, it never should be done. What a common thing it is to hear a refractor ask: "Better on or off?" Now, if an opinionated person is being examined, especially an old one, who thinks he can see well enough with the glass before him, and fears that

if it is taken away it can not be found again, he is sure to answer: "Better off," because he has made up his mind to stick to that glass through thick and thin; but with the first, second or third testing system he will answer the question: "Which is better, on or off?" without knowing it.

I never ask a patient to judge between two lenses when there is only a slight difference. To illustrate: I will suppose a patient's true correction is plus 2.00 Sp. I do not hold before him a plus 2.25 Sp. and then a plus 2.00 Sp., and ask him to choose between them, because it is a difficult and nerve-harrowing task. I put either one of them in the trial-frame and have the patient quickly select the correct one by the use of my instrument. I wish to call the attention to the fact that it always magnifies the error. In the case given above, if I use the half diopters, in the plus test it triples the error, and in the minus test it halves it. If I use quarters, in the plus test the error is doubled, and in the minus test it is exactly right, so that the patient has an easy task to judge between the proper correction and plus 0.50 Sp. added. The cylinders act the same as the spheres.

Anyone using this instrument and carrying out this system will be surprised to find how much shorter will be the time consumed in refracting each case, and what I believe is more to the point, he will not have his patients go away half sick, complaining to everyone they meet, and dreading the day when they will need to return.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, AUGUST, 1905. VOL. XIV. NO. 8. NEW SERIES

Editorials.

WHY A DOMINANT SIDE OF THE BRAIN?

Every circumstance that would establish the truth, or dethrone an error, is worthy of being recorded. Recently in this journal was published a contribution in which it was claimed that the dominancy of one side of the brain is determined by the fact that the cuneus of that side of the brain presides over direct or straight forward vision; that is, the two maculas have a common brain connection with the cuneus of the dominant side; and that this connection makes that side dominant. If the maculas are connected with the left cuneus the individual must be right-handed, and could never become ambidextrous, and the active speech center must be in the left brain.

The three cases, two of which were seen yesterday, tend to prove the correctness of the statement made above. One shows, beyond a shadow of doubt, that both of his maculas are connected with the left cuneus. Several years ago he had a basillar meningitis which, for a time, made him almost blind in the entire field of vision. In a few months he recovered vision in the entire right field for both eyes, which, fortunately for him, included both maculas. The left field has remained blind, and the blindness lacks only 10 degrees of including the macula of each eye. Macular vision is perfect in each eye. The man is right-handed. It hardly needs to be stated that the left field blindness was caused by pathology of the right optic tract.

The second was one of brain abscess, a full report of which will be published later. The abscess was found through an opening made by the trephine, above and behind the left ear, and it contained a large quantity of pus. For several weeks prior to the operation performed by Dr. J. L. Crook, Jackson, Tenn., the man had been unconscious, and at the time of the operation was almost dead. Soon after the pus had been discharged he regained con-

sciousness. Although the abscess involved the Island of Reil there is no aphasia, thus showing conclusively that his speech center must be in his right brain. He is left-handed. It is reasonable to conclude that the dominancy of his right brain is due to the fact that his two maculas are connected with his right cuneus.

The third case was one of abscess in left brain, involving the Island of Reil on that side. The patient was aphasic, showing that her speech center was in her left brain. She was right-handed. The dominancy of her left brain must have been caused by the fact that her two maculas were connected with the left cuneus.

G. C. S.

EYE STRAIN AND NERVOUS DISORDERS.

In a recent editorial in one of our medical journals¹ we find this statement: "Of late the view has been widely and insistently promulgated that eye strain is responsible for many, if not the majority, of the physical ills to which flesh is heir." The writer of this would decidedly object to any such sweeping statement as that, nor can he see any reason why it should be made in a reputable medical journal. As this editorial is read it seems to have been based upon a sort of one-sided symposium on eye-strain at a meeting of the ophthalmic section of the New York Academy of Medicine, held under the auspices of the academy itself. This writer was present at that meeting and as far as his remembrance extends the discussion was not participated in by any very prominent ophthalmologist. The papers read were by two neurologists and only one by an oculist. Furthermore, as one listened to the reading of the papers and to the discussion that followed the entire spirit of the occasion seemed to be of a certain levity, rather out of place in a scientific meeting, which was principally directed against the writings of one member of the profession who has been perhaps too extravagant in his published work and whose enthusiasm over some of his wonderful cures has led him to make very extravagant claims which others have not been able to find or to fulfil in their ophthalmic work. The remarks of the speakers would have led a hearer to suppose that this gentleman was a leader in the profession of ophthalmology and that his teachings were the principles of that branch of medicine at the present time, but this writer seriously objects to any assumption of that sort and that Dr. Dana's concluding "pungent" remarks as quoted in the same paper: "The psychosis

1. The American Therapist.

connected with eye strain is that shown by a group of oculists who have become obsessed with the idea that eye strain forms the background of most pathological conditions," has no justification in the work of the best oculist, nor can it be considered as the true conception of this subject by the oculist of the present day.

Ophthalmology, in its best sense, is a true science, in which I am inclined to think we are yet on the threshold, particularly so in reference to the motility of the eyes, and if this work is yet in an experimental stage, then any such extravagant solution as is implied in the editorial referred to finds no justification in the opinion of this writer. But what was the evident conclusion of Dr. Dana's paper on that occasion? It seemed to me that in reference to the minor psychoses, eye strain may play a very important part, even sometimes as a direct factor in certain mental conditions, and that it frequently is a contributing cause, inasmuch, that in many reflex conditions referable to the head, eye strain, either refractive or muscular, is frequently the only cause. But all this does not imply that we have a pathological condition present. I think this may be considered as the view of most oculists in this country, and the proposition "that it is a potent factor in many serious diseases" is simply a supposition that must exist in the mind of one who has not informed himself of the true work that the oculists are now doing. This writer would assure him that the oculists of the present day are not vexed with the idea that eye strain is the cause of any pathological conditions, but that they are trying to know just what influence an eye strain, either refractive or muscular, may have on the minor psychoses, either primary or secondary, and simply according to the limits to which Dr. Dana himself accepts, as he has acknowledged that some cases of minor psychoses may be due to eye strain.

One of our most prominent alienists stated to this writer that he did believe that eye strain may have some influence on certain conditions, but put great stress on this remark: "*When there is eye strain!*" Now, who shall settle that question, the oculist or the neurologist? The matter will eventually adjust itself to the true value and until that time comes it will be well for most of us to restrain our views until we know what the correction of eye strain will and will not do.

F. V.

Review.

CYCLODIALYSIS—A NEW GLAUCOMA OPERATION.

[Reviewed by H. Gifford, M.D., Omaha.]

In spite of the half century of research and experiment that has followed Graefe's discovery of the effect of the iridectomy on glaucomatous eyes, practically the only operations considered by the average ophthalmologist for this disease are iridectomy and sclerotomy. The incision of a chamber angle as recommended by de Vicentis, although mentioned by writers on the subject, has had no large following. Now comes Heine¹ with an attempt to restore normal tension by establishing a communication between the anterior chamber and the supra-choroidal space. The starting point of his idea was the discovery by Fuchs that detachment of the choroid was occasionally a result of the operation for cataract, and other operations involving incisions in the neighborhood of the chamber angle. Fuchs explained this occurrence on the supposition that the dragging on the tissues produced by the cutting instrument opened communication between the anterior chamber and the supra-choroidal space, and the first microscopic evidence in support of this theory was furnished by Demari, who found such a rupture of the ligament in an eye which had been enucleated shortly after an iridectomy for glaucoma.

Heine describes his operation as follows: Eight to 9 mm. up and out from the corneal limbus the conjunctiva is raised with a fine forceps, and a flap formed which is turned down over the cornea, a provisional suture having been placed to permit its rapid reposition. The globe is then fixed firmly and the episcleral tissue scraped away 4 to 5 mm. from the limbus, and then with a straight lance held like a pencil, the sclera is gradually cut through, making a wound from 1 to 2 mm. in length. The ordinary stilet, such as is used to complete the toilet after a cataract operation, is passed in carefully between the choroid and sclera, until the resistance of the pectinate ligament is felt. The instrument is then slowly pushed through this until it appears in the anterior chamber, and by lateral excursions the opening in the ligament is widened to the extent of 2 or 3 mm. The stilet is now slowly withdrawn and the suture is tied. If but little of

1. Deutsche Med. Wochenschrift, vol. xxi, 1905.

the aqueous has been lost at the time of the operation the tension remains unaltered for a day or so, but then the eye becomes softer.

The danger of cutting through into the vitreous seems to be slight. At least it has not occurred in the twenty cases in which Heine has thus far employed the operation. "The results hitherto, although only blind or almost blind eyes have been operated on, have been decidedly encouraging. I shall report the particulars in the near future. From my experience, however, it can already be regarded as certain that by means of the cyclodialysis the pathologically increased intraocular tension, even in absolute glaucoma, can be permanently reduced."

The reviewer would venture a doubt as to whether this form of opening from the anterior chamber will prove any more easy to maintain than the numerous other openings which have been recommended for glaucoma; *a priori* it would seem likely that an opening which must tend to be closed by the intraocular pressure forcing the margins against the firm sclero-corneal coat would be more difficult to maintain than a subconjunctival sclerotomy would which has only the yielding conjunctiva on one side. It may also be noted that the fact that there is a physiological communication between the anterior chamber and the supra-choroidal space seems to have escaped the attention of Heine, as well as of nearly all the other writers on this subject.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, AMERICAN MEDICAL ASSOCIATION.

PORTLAND, OREGON, July 11, 1905.

Dr. Christian R. Holmes, Cincinnati, Ohio, Chairman, presided.

Prof. J. Hirschberg of Berlin was introduced as an invited guest of the society.

Chairman's Address: "Studies of School and Hospital Hygiene of Interest to the Ophthalmic Surgeon." (Illustrated with lantern slides.) DR. CHRISTIAN R. HOLMES, Cincinnati, Ohio.

The essayist reminded the members of the amazing expansion of all human activities in this country in the past few years and especially of the efforts given to the building of new schools, colleges and hospitals. As a people, he thought, we were slowly awakening to the importance of properly lighting, heating and ventilating these new buildings in accordance with scientific laws; we no longer took old buildings and tried to remodel them to make them resemble what a school, college or hospital should be, but made efforts to construct them upon the latest and most improved principles. He considered the problem of the lighting of school houses as a comparatively easy matter, and said the law laid down by Dr. Risley could not be broken without disaster to the children's eyes—"that it is the duty of the architect to secure in his plans all the window surface possible consistent with safety of construction." Pupils should face a blank wall of neutral tint and abundant light should be admitted from the left, or left and rear, so that the writing hand should cast no shadows upon the writing surface. A number of pictures were projected upon the screen showing badly lighted school houses and those which were proposed as good models. The writer referred to the physical deterioration of children soon after entering school life, and to the large number brought to the attention of the oculist on account of progressive myopia. Out of 30,000 children examined in the schools of Cleveland in 1899-1900, he said, 20 per cent. were found to have defective sight, and in Indianapolis out of 25,696, 32 per cent. were trying to do school work with defective vision. The speaker advocated Dr. Risley's proposal that the schools should introduce a modified curriculum adapted to the physical capabilities of these scholars; the hours of eye and brain work should be cut down, or so distributed as not to

become a drain that would be felt as a burden. In hospitals sunlight and brilliant diffused daylight should have free admission. A more difficult problem in hospitals was the matter of ventilation. The different systems for securing proper ventilation were described and discussed in detail, with pictures showing the methods adopted in various hospitals and public buildings. Sanitarians and educators everywhere, Dr. Holmes said, were clamoring for proper and systematic medical inspection of school children and it behooved those whose province is the eye to heartily second their efforts. He commented upon the work of Cohn of Breslau, Williams and Ayers of Cincinnati, Agnew of New York, Derby of Boston, and of Risley and his associates in Philadelphia in working up the subject of the production of myopia by the ill-lighting of school rooms, and thought we had already gathered sufficient facts to justify a vigorous demand for the expert examination of the eyes of all school children as soon as they reach an age when they can be intelligently examined.

"Is Keratitis Ever Caused by Rheumatism?" DR. LEARTUS CONNOR, Detroit.

The writer looked upon rheumatism as a "symptom complex" rather than a definite disease and desired to separate it from the joint diseases due to "infected wounds," "typhoid fever," "acute follicular tonsillitis," or "septic pyemia," in his discussion. Clinical experience, he said, showed that eliminative agents influenced most favorably both rheumatism and associated keratitis. In rheumatism the fibrous tissues were chiefly attacked. Experiments had shown that ligations of the long ciliary arteries or the venæ vorticosæ produced a parenchymatous keratitis, though observations on the human subject were lacking to indicate their force. He thought there was no *a priori* reason why the cornea should always escape the fate of tendons, endocardium or joints, so that the question was pertinent, Does it escape? He considered that rheumatism might appear primarily in the sclera and secondarily in the cornea, or vice versa. Most ophthalmologists declared they had never recognized such keratitis and most of the books did not mention the subject. A number of cases were reported illustrative of the author's views. In three there was a clear history of recurring attacks of keratitis with rheumatism, the keratitis appearing with the rheumatic attack and fading as it declined; all benefited by anti-rheumatic treatment. All were classed as rheumatic keratitis, because they started in the cornea during an attack of acute rheumatism; some recurred many times; other constitutional causes were eliminated; they were non-suppurative; there was pain and pho-

tophobia disproportionate to corneal lesion; anti-rheumatic treatment alone promoted rapid recovery. Queries on the subject had been sent out to colleagues and more or less full answers received. Sixty-seven had never seen cases of corneal disease which they could ascribe to rheumatism. Several had seen keratitis which they ascribed to gout. Sixty had seen one or more cases. The full text of positive answers accompanies the paper.

Discussion.—Dr. W. H. Snyder, Toledo, Ohio, added two cases in which anti-rheumatic treatment and attention to diet produced a quick and permanent recovery.

"The Physiologic Action of Dionin." DR. W. H. SNYDER, Toledo, Ohio.

The writer, after explaining the pharmacology and the physiologic action of dionin, described a number of experiments bearing upon its action on tissue and cells. The Albino rabbit, medium size, was used; dionin in powder placed in each eye in larger quantities than would be necessary if the eye were abnormal; rabbit killed; globe and tissue enucleated, placed in formalin 4 per cent. for 48 hours, and later sections made from cornea. Control specimens were also made from normal rabbits' eyes. Pictures of the findings were projected upon the screen, showing the usual signs of general edema, vacuolation of the cells in the epithelial layer, the sections appearing water-logged and hazy. The lymph spaces were changed in shape and dilated. No absorption of cells as in edema of long standing. The surface uneven and the general picture that of edema of the cornea. He concludes that the action of the drug is purely local—greatest where the drug has actually rested; that its most marked action is in eyeballs where the tension is increased; that it has some disassociating action on the intercellular cement substance, allowing a transudation of serum from a globe under pressure; that its analgesic action is explained by its lessening of tension and the well-known action of the derivatives of opium. In iritis with adhesions plus tension the use of dionin lessened tension and permitted absorption of the mydriatic with prompt relief of pain and dilation of the pupil. In corneal ulcers the repair process begins as soon as the ulcer is cleared. The more recent the inflammation and higher the tension the better the results. In beginning pannus the author had cleared up the cornea and resisted permanent opacity more satisfactorily than with any previous treatment, the lid, of course, being treated for the cause. In glaucoma he preferred it to eserine, relief from pain being very marked, due, he thought, to relief from pressure. In old vitreous opacities he had had poor success.

Discussion.—Dr. H. H. Brown, Chicago, called attention to the

fact that a recent German investigator had found that dionin did not affect all animals. Experiments had been made with dogs, rabbits and cats. The cats were not affected at all.

Dr. Snyder, in closing, said that the effect was very slight in rabbits, requiring a great deal more of the drug than the human eye.

"The Correction of Exophoria by the Development of the Interni." DR. W. H. ROBERTS, Pasadena, Cal.

The writer considered that oculists were guilty of an error of omission when they treated asthenopic symptoms as though all were accommodative and none muscular, and recommended the necessity of determining the muscle balance in all refraction cases, emphasizing a known and tried method of relieving the majority of cases in which exophoria exists. While not opposed to operative measures when indicated, the author believed they should only be performed when the lack of balance could not be cured or relieved by other measures. A routine examination of muscle balance should be made in every case of refraction. The method used for developing the adductors consisted of exercises at home, reinforced by regular visits to the office for supervision and additional exercises. He placed the proper ametropic correction before the eyes and directed the attention of the patient to a point of light six meters distant. Weak prisms, bases out, were then put on and the strength rapidly increased until the patient had difficulty in keeping the point of light single. He was then told to close the eyes, slightly stronger prisms inserted, and on opening the eyes he looked at an ivory ruler twelve to fourteen inches from the eyes, the examiner's body shutting off the point of light. With the patient looking intently at the ruler the examiner walked off back towards the light and on reaching it stepped aside, the patient's gaze being quickly transferred to the point of light, which was usually single. If double, a weaker prism was used until the image could be fused and then the strength increased. Prism exercises were also carried out by the patient at home. A number of cases were reported in detail to illustrate the author's views.

Discussion.—Dr. G. C. Savage, Nashville, considered that the proper treatment of the condition was to correct the tonicity of the interni; that the muscles should be exercised; that accommodation is strong, but convergence is weak and the prism exercises offer the proper remedy, exciting to activity the two basil centers and increasing the tonicity of the interni muscles.

Dr. F. B. Eaton, San Francisco, thought that the best way to cure the condition was to build up the general health of the patient;

that otherwise it did not make much difference how much exercise they were given. He considered the condition a neurotic one.

Dr. Dudley S. Reynolds, Louisville, agreed with the last speaker that systematic dieting and proper medication, the administration of full doses of *nux vomica*, etc., constituted the best treatment.

Dr. W. C. Posey, Philadelphia, thought the correction by prisms lasted only so long as the exercises were continued; when the exercises were discontinued the trouble returned.

Dr. S. D. Risley, Philadelphia, referred to the cases dependent upon faulty, or abnormal development of the orbit, in which faulty attachment of the muscles existed, and said that no amount of exercise would cure them. He doubted very much if any amount of exercise ever strengthened the ocular muscles in the sense that the biceps might be strengthened.

Dr. John E. Weeks, New York, believed that there is a class of cases that may be benefited by these exercises, but that there is also a class of cases, as Dr. Risley had mentioned, that never could be benefited by prism exercises; each class of cases should receive its proper treatment and the means of determining what that treatment should be could be found in the perimeter or the tropometer.

Dr. C. H. Williams, Boston, said that in the use of the Maddox rod he found that there was always a tendency to bring the line and the light together; a tendency to fuse images. This could be avoided by the use of the apparatus which he had shown to the section at St. Paul, consisting of a series of green figures with a red line running through them, while in the spectacle frame a red glass was placed before one eye and before the other a green one, so that the line is seen with one eye and the figures with the other.

Dr. William Zentmayer, Philadelphia, thought a great many cases might be relieved without prisms by putting on a very partial correction and relieving the disturbance caused by the correction of the hypermetropia.

Dr. Leartus Connor, Detroit, believed that the essential truths of the paper could not be controverted. He had not been able to explain, however, why so many cases of muscle imbalance got along without any trouble. He also advocated the use of very deep massage over the medulla and of the vibratory variety. Sometimes where he had not obtained results with the lower prisms he had used as high as 100 or 120 degrees.

Dr. J. S. Kirkendall, Ithaca, said that aside from general systemic conditions there might be causes that should always be looked for. He had had one case which was relieved by the removal of a plug of cerumen from the ear. Nasal conditions were also to be

taken into consideration, spurs of the septum, enlarged turbinates, etc. These reflex causes should always be looked for.

"Lateral Displacement of Tendon Insertions for the Cure of Strabismus." DR. EDWARD JACKSON, Denver.

The writer said that the four recti muscles have practically a common origin and if it were possible to shift the insertion of one to the site of the insertion of the other, a complete change in its action would be effected. Such a change was impracticable, because of other tissues in the orbit, but enough alteration was possible to modify their action. By moving their insertions inward, the superior and inferior recti could be made to assist convergence; by moving them outward, to resist convergence. Such shifting of the insertion might be effected by complete tenotomy, with suture of the tendon in the desired position. A lesser change might be produced by partial division of the insertion, leaving the edge standing.

Discussion.—Dr. G. C. Savage, Nashville, did not agree with the writer that if a muscle were detached and connected with another it would perform the function of the other muscle. It depended upon the nerve impulse. He thought a muscle should not be displaced by advancement unless there was cyclophoria. If there was cyclophoria a marginal tenotomy should be done.

Dr. Jackson, Denver, said, in closing, that the operation had been done by himself and by Dr. Stevens of Denver with complete success. He believed the bad ultimate results from tenotomies that were still sometimes seen were not due to the fact that tenotomies were not proper, but to the fact that it was done in cases that should not be so treated.

"Transitory Paralysis of the Abducens: with Report of Cases." DR. MEYER WIENER, St. Louis.

The author referred to the evident functional character with usual absence of hysterical symptoms, the comparative frequency and scant amount of literature on the subject. The condition was considered self-limited and all the cases occurred in young females and was monocular. Those of previously reported cases were double sided, in older persons, and associated with other hysterical symptoms. The writer maintained that the cases proved that a functional (or hysterical) paralysis of the abducens does occur; may be unilateral or bilateral and that there need not necessarily be any other hysterical sign or symptom evident.

Discussion.—Dr. H. Stillson, Seattle, thought that the ability to rotate the eye outward depended largely upon the individual's facility and that the education of one's externi was more difficult

than the education of one's interni. The difference in the ability of different individuals to rotate the eye outward was surprising. He thought, therefore, that some of these cases might be put in the class of cases due to hysteria or to individual lack of facility in rotating the eye.

"Demonstration of a Simple Method of Accurately Localizing by the X-ray a Foreign Body in the Eye." DR. VARD H. HULEN, San Francisco.

Dr. Hulen exhibited his method with apparatus and patient. The instrument for holding the tube and fixation of the patient were very simple, and such that the patient could not move. Fixation of the head was secured by means of the teeth fastening upon a piece of soft wood. The tube was so placed that the point where the wires cross and the V-shaped sight were in a direct line. The anode could be raised or lowered and moved from side to side. A lead strip was used upon the lower lid and the measurement from the center of the cornea to the top of the lead taken; then the distance posteriorly from the apex of the cornea to the piece of lead, and the distance from the anode to the cross wires. The method of plotting the location from these measurements was demonstrated by means of charts upon the board.

Discussion.—Dr. Jno. E. Weeks, New York, said that the first work in determining the location of foreign bodies in the eye had been done by Sweet of Philadelphia, who antedated McKenzie Davidson by about a year. He thought an improvement upon the apparatus might be made in having the patient in a recumbent position with the head strapped to the plate holder. Dr. Dixon of New York had devised a head rest of this kind. He thought, too, that the patient should fix some object and used for that purpose a little ball held just above the head, parallel to the plane of the plate holder. There was a possibility of error in the relation of the marker to the eyeball when it is placed on the lid because the patient did not at all times keep the lid still. Dr. Dixon and the speaker had devised a chart for plotting the localization of foreign bodies in which millimeter squares were used, so that one could see at a glance the exact location and distance from any given point.

Dr. Edward Jackson, Denver, was very much pleased with the simplicity attained by Dr. Hulen in his method and thought the fixation by means of the teeth very excellent.

"Blasting Eye Injuries." DR. JOHN A. DONOVAN, Butte, Mont.

The writer described the various methods employed in mining and explained the causes of accidents. He concluded that with

but few exceptions blasting injuries resulted from want of care on the part of the patient or his associates; that the eyes should be examined immediately, the larger foreign bodies removed, atropin used and the subsidence of general reaction awaited. When reaction subsides, remove particles as symptoms indicate, when not practical to remove at once; foreign bodies inside the eye had better be removed as soon as located; in children anesthesia to be used if the specks were deeply imbedded. Favorable prognosis should always be guarded; deep internal changes often being produced. Never operate to restore vision until inflammatory signs have disappeared; nothing should be done or said that could not be substantiated in the courts, careless remarks encouraging patients into litigation, the ultimate consequences of which were disastrous to the client.

"Some Eye Injuries and Their Lessons." DR. F. C. HEATH, Indianapolis.

The author presented reports of three groups of three cases each. Group 1, Foreign Bodies in the Lens; group 2, Foreign Bodies in the Iris; group 3, Wounds In or Near the Ciliary Region. Observations were made on and lessons drawn from the comparison of the different features of these cases as to course results and management. The author was persuaded that the safest course is to resort to prompt surgery, at least where the prolapse is in or near the ciliary region. He had never had cause to regret resorting to such procedures.

"Traumatic Lesions of the Eye." DR. FRANK W. MILLER, Los Angeles.

The writer called attention to the increasing frequency of these lesions and referred to the classification, old and new. The import of the injury depended upon its location and extent and upon the inflicting agent. Infection and hemorrhage were the distressing possibilities and of grave consequence. In the non-penetrating wounds an expectant attitude might be assumed, but in these only. The use of cyanide of mercury was especially advocated, subconjunctivally after Darier's suggestion. The introduction of iodoform into the interior of the eye was also referred to, but personally its use had been disappointing. Every effort should be made to remove the foreign body, an occasional tolerance offering no excuse for allowing it to remain. All prognosis should be guarded.

Discussion.—Dr. Edw. Jackson, Denver, agreed with Dr. Donovan and thought the lines laid down by him for treatment of these cases the best that could be followed; the large bodies to be removed at once, the smaller ones from time to time as they make

trouble, and still others to be let alone always. He also referred to the beneficial influence of the *x*-rays upon these eyes.

Prof. J. Hirschberg, Berlin, believed that it was not safe to leave foreign bodies in the eye; they were deceptive. Every particle should be extracted from the posterior part of the globe. It should always be done at once. Foreign bodies from shoeing horses, he said, were especially infectious. We could, in other cases, have no test of the infectiousness of the foreign body, and so, in fresh cases, they should always be removed at once. The giant magnet should never be applied as a means of diagnosis. If the splinter is as large as the papilla optica the formation of connective tissue follows and there is detachment. He always attempted to dislocate the foreign body from its bed by means of the hand magnet. If the body has gotten into the anterior chamber an incision is made and the tip of the curved point used to draw it out; then the iris is replaced and the pupil remains clear.

Dr. E. Smith, Detroit, had used the Hirschberg magnet for many years and had been successful in many instances with the hand magnet where the Haab giant magnet had failed. Where the foreign body has been located, incision in the sclera in the vicinity of the body was preferable to the use of the large magnet with its danger of drawing it into the ciliary region.

Dr. L. H. Taylor, Wilkesbarre, thought it was not so much the location of the injury as the nature of the foreign body and what might be on it. Some very serious injuries get well with very little difficulty, while other apparently slighter ones cause great damage. If we could only be sure of watching the patients, many eyes that are enucleated might be saved.

Dr. Jno. E. Weeks, New York, thought the prognosis should depend very largely upon the character of the foreign body. Iron and steel were dangerous in every case unless removed. Copper and zinc produce suppuration and inflammatory reaction of severe type. Particles of glass may, under certain conditions, remain indefinitely without causing trouble. Lead will, in the majority of cases, set up irritation, though shot may remain in the eye for many years. The giant magnet should not be used for diagnosis. He used the T-shaped incision in removing bodies from the anterior chamber.

Dr. S. D. Risley, Philadelphia, emphasized Dr. Donovan's remarks upon the importance of waiting before operative interference for the removal of cataractous lens. Where the foreign body is entangled in the iris, he thought it better to do an iridectomy because the iris is prone to take on inflammatory reaction of a

plastic character. After the localization of the foreign body he thought it safer to remove them without the use of the giant magnet, the scleral puncture and the employment of the Hirschberg magnet being preferable: the point should not be inserted into the vitreous. He thought the giant magnet dangerous if the foreign body was of considerable size. Dr. Risley also alluded to the non-magnetic character of the manganese steel, which might often cause disappointment.

Dr. Mark D. Stevenson, Akron, referred to the use of iodoform in cases of beginning panophthalmitis and had devised a little instrument for placing the powder within the eye without any difficulty. He preferred the powder because it remained for a considerable time. Fluid was apt to be washed away by the aqueous humor.

"Description of an Advancement Suture, with Collective Suggestions Regarding Operations on the Ocular Muscles." DR. MARK D. STEVENSON, Akron, Ohio.

The writer considered that an advancement alone or combined with a tenotomy is to be preferred to a tenotomy alone. Usually when an advancement was performed it was advisable to wholly or partially tenotomize the opposing muscle of the same eye. He described his advancement suture, which was a modified Worth's, the method of suturing being the only essential difference. Circular letters had been addressed to ophthalmic surgeons throughout the United States in order to get their views regarding some of the difficult questions in ocular muscle operations, and the replies are given.

Discussion.—Dr. W. C. Posey, Philadelphia, while he believed the operation described a good one for operating on a good, stout tendon, in thin tendons would prefer the double stitch.

Dr. Jno. E. Weeks, New York, desired to protest against any stitch that bunches a muscle, which he thought the single stitch did; the muscle was not spread out and did not have the effect on the eyeball that it should; the attachment to the globe was by a few bands relatively. The operation should spread the muscle out and give a linear reattachment.

Dr. Mark D. Stevenson (closing), thought the bunching of the muscle, as referred to by Dr. Weeks, occurred particularly where the capsule and conjunctiva were not included, but where they were included he did not find that to be particularly true. He considered that it gave a good attachment.

Address (by special invitation). PROFESSOR J. HIRSCHBERG, Berlin.

The address consisted of a study of the history of the old Arabian ophthalmology and would not lend itself to abstracting.

The society gave a standing vote of thanks to Professor Hirschberg for his eloquent and learned address and requested a copy for publication in the transactions of the section.

"The Ocular Symptoms of Affections of the Accessory Sinuses of the Nose." Dr. W. C. POSEY, Philadelphia.

The general symptomatology, the writer said, was now well recognized and attention was called to the less striking manifestations and an endeavor made to perfect the ocular symptomatology. There was difficulty in diagnosing sinus affections by rhinologic examination alone. The ophthalmologist might render aid by early appreciating certain ocular conditions, such as edematous infiltration of the optic nerve, shown by lowering of visual acuity or by defects in field of vision, and ophthalmologically by dilatation of retinal veins and choking of lymphatics around the central vessels. The significance of diminution in light sense was referred to and the orbital symptoms spoken of. The possibility of diagnosing the particular sinus affected was increased by noting the character of displacement of globe and position at which abscess points. There was a tendency for abscess of the frontal sinus to empty directly into the lachrymal sac. Palsy of the extraocular muscles usually attributed to rheumatism was not infrequently the result of sinusitis. Pseudo-migraine-ophthalmoplegic, conjunctival, corneal and uveal symptoms, changes in refraction, asthenopia, headache and neuralgia, might all be due to affections of the accessory sinuses of the nose.

Discussion.—Dr. C. R. Holmes, Cincinnati, said that you might separate the eye and ear completely in their study, but you can not separate the accessory cavities of the nose from the eye, and he held that every oculist should be familiar with the diseases of the nose and accessory cavities. He had as far back as 1896 published an article on "The sphenoidal cavity in its relation to the eyes." He found in these chronic cases a daily rise of temperature varying from 1 to 2 degrees, though to all appearance the people might be well. In ethmoiditis the disease often pointed to the outer canthus. In sphenoidal cases the pain was generally referable to the temple.

Dr. W. H. Snyder, Toledo, called attention to the fact that simply probing through the nasal cavity might not always bring pus, even where the sinus was affected; there might be no opening.

Dr. F. H. Hilscher, Spokane, believed there were a great many ophthalmologists who had neglected this subject; he had had many

cases of this kind that had been in the hands of competent oculists, and had had cases where pus was not discovered but where there were pressure symptoms caused by the turbinates and septum.

Dr. S. D. Risley, Philadelphia, had been surprised, after his attention had been called to the important relationship of certain obscure affections of the eye and diseases of the sinuses contiguous to the orbit, at how frequently they occurred; when it was considered that these sinuses drain into the nasal cavities and the frequency with which they became blocked, it was not so surprising. He had found choroidal disease frequent in these cases. He had recently had a case of exophthalmos of obscure origin where it was only after probing the frontal sinus on that side that the cause was discovered. Study of these obscure cases was never complete until the sinuses had been investigated.

Dr. Leartus Connor, Detroit, had observed these conditions for many years in a somewhat empirical manner, not only in the chronic organic lesion but in conditions which had not reached that stage. It had been his habit for many years to investigate the sinuses in these obscure eye affections.

Dr. Edw. Jackson, Denver, referred to the difficulty of recognizing sinus disease and had frequently referred such patients to expert rhinologists and had them sent back with the report that there was nothing the matter. He had come to have more confidence in certain clinical associations of symptoms than in the ordinary rhinological examinations.

Dr. J. A. Donovan, Butte, Mont., referred to the lack of accommodative power and defective vision in adenoid children and thought the symptoms often due to pressure in ordinary congestive rhinitis.

Dr. J. A. Bradfield, La Crosse, Wis., reported a case seen four months ago, a lady of 32, referred to him for supposed glaucoma, in which the trouble proved to be large cystic middle turbinate.

Dr. Posey, in closing, said that it was not necessary to have pus to occasion these symptoms, but that simple congestion of the sinuses might occasion them.

"The Extraction of Uncomplicated Immature Senile Cataract."
DR. A. E. BULSON, JR., Fort Wayne, Ind.

The speaker said that if the sclerosing process is interfered with there is a loosening up of the lamellæ and a molecular disintegration resulting in a cloudiness of the lens fibers. Called immature cataract when cloudiness does not extend throughout lens mass. This should be differentiated from the sclerosed lens of advanced

years. Extraction of a fairly clear sclerosed lens no more complicated than extraction of mature cataract. Extraction of immature cataract presented difficulties which often deterred operators, but ultimate results in uncomplicated cases properly operated on warranted the procedure when patient could not follow vocation, and months might be required for complete opacification. The combined operation preferred, with large corneal section, and large opening in the capsule. Objections to preliminary iridectomy, with or without effort to produce artificial ripening and extraction later, were that the double operation puts the patient to added risk, which is unnecessary in order to accomplish satisfactory results, and the artificial ripening of immature cataract was not followed by sufficient advantage in the subsequent extraction to warrant its adoption. Difficulties in removal of soft lens substance were overcome by employment of irrigation of the anterior chamber with normal salt solution by Lippincott's method. Iritis, either from trauma produced by the irrigation or the swelling of remaining cortical substance was anticipated by early and prolonged use of atropin. Dionin, in 5 or 10 per cent. solution, or occasionally in fine powder, immediately after closure of corneal wound to promote resorption of lens debris, and by such practice secondary operations were very greatly lessened in number. Dr. Bulson reports satisfactory results in a large number of extractions of immature cataracts in his own practice and gives the opinions of sixty-five prominent American operators who answered a letter of inquiry on the subject.

Discussion.—Prof. J. Hirschberg, Berlin, said that von Graefe had advocated the extraction of unripe cataracts, he had followed, and then the operation had been advocated by Sweigert. He did not advise the removal if the other eye was normal or had good vision.

Dr. S. D. Risley, Philadelphia, asked Professor Hirschberg if he would consider it justifiable to remove a cataract, traumatic or otherwise, in a man at work among machinery, if the other eye were good, because of the danger in his work from the blind side. Professor Hirschberg replying that he would.

Dr. W. C. Posey, Philadelphia, thought the paper would be the means of keeping a great many individuals from remaining blind unnecessarily, it being now the practice of a great many ophthalmologists to wait until the cataract is fully ripe. He had always followed Professor Hirschberg's teaching to remove the cataract as soon as the vision in the good eye fell so low as to interfere with the ordinary duties of the person.

Dr. C. R. Holmes, Cincinnati, wished to substantiate what had been said with regard to the removal of unripe cataracts. It had been his practice for twelve or thirteen years to remove cataracts when the exigencies of the case demanded it.

Dr. Bulson, in closing, said that he had been surprised to find that a small percentage of prominent operators refused to operate on immature cataracts at any stage. He had grown to look upon iritis as one of the necessary complications of ordinary removal of immature cataracts; sometimes only a very slight reaction and sometimes severe; never one that was not easily controlled by atropin and dionin.

"Endothelio-Cylindroma of the Orbit, with Report of a Case. Removal, with Preservation of the Vision and Motility of the Eye." DR. JNO. E. WEEKS, New York.

Reference was made by the writer to reported cases of cylindroma and to the frequency of their occurrence. The histology and pathology of these growths were fully considered, and two cases reported. Taking into consideration the fact that these tumors contain hyperplastic tissue, which develop largely from mesoblastic tissue, but that epiblastic tissue is always present and may preponderate, it was evident, the writer said, that the tumors are "mixed tumors." But, that since the peculiar hyalin change that takes place in mesoblastic formations in these growths is often so striking a feature, he believed, with Verhoeff, that the cylindroma should be retained.

"The Prevention and Cure of Progressive Axial Myopia by Appropriate Treatment of the Internal and External Recti Muscles: with Report of Cases." DR. F. S. CROCKER, Chicago.

The writer spoke of the percentage of myopia found in European countries and its constant increase in this country. There had been no specific treatment used in the past for its prevention or cure. The author related his experience with prism exercise and pointed out the reasons for the poor result formerly obtained. Detailed description of the author's present method of using prism exercise and galvanism in the treatment of progressive myopia was given. The conclusions were that (1) the most important etiological factor in a very large number of cases of progressive myopia is an insufficient power of convergence; (2) that it is immaterial in so far as the question of treatment is concerned whether this inadequate converging power is the result of some anatomic defect in the shape or position of the orbit, or whether it is due to a fault in the insertion or innervation of the extrinsic ocular muscles; (3) that in all cases in which destructive fundus

changes have not already resulted in too great a loss of vision, it is possible to check the progress of the myopia, or in the proper sense of the word, effect a cure; (4) that in addition to the correction of the refraction errors, the eye muscles should receive due attention, and, when found defective, proper prophylactic treatment instituted or advised; (5) that for obvious reasons none but specially qualified legal practitioners of medicine should be allowed to prescribe glasses for, or in any way treat, myopia.

"Rat-tail Tendons for Sutures in Eye Surgery." DR. KASPAR PISCHEL, San Francisco.

The speaker demonstrated his method of securing the tendons from the fresh rat-tail and said that they made strong, absorbable suture material. The absorbability of the sutures was, he said, especially in children, a great advantage.

"Iritis Tuberculosa as Diagnosed and Treated by Koch's Tuberculin." Drs. W. A. GAMBLE and E. V. L. BROWN, Chicago.

The authors reported the apparent cure of a marked case of iritis tuberculosa, with complete absorption of the nodes by the use of injections of small doses of Koch's tuberculin T. R. as advocated by Prof. von Hippel. They also obtained repeated characteristic local and general reaction upon the use of 4 and 5 mg. doses for diagnostic purposes. The report is the thirty-fourth detailed report in the literature. The authors advocate very strongly the diagnostic use of tuberculin and recommend further attempts for therapeutic purposes.

Discussion.—Dr. A. E. Bulson, Jr., Fort Wayne, had the pleasure of seeing the case and he had been one of the first to suggest the use of tuberculin for diagnosis. He advocated the use of larger doses for diagnostic purposes, 6-9 mg. In his own case the original dose had been 10 mg. in a child 4 months old. Keeping the temperature for three or four days previous to the use of the tuberculin was of importance and the possibility of syphilis should also be taken into consideration.

"New Test Types Made According to Geometrical Progression." DR. C. H. WILLIAMS, Boston.

The set of new test types had been made according to the geometrical progression first proposed by Dr. John Green and lately recommended by the French Ophthalmological Society. It had a more complete series of letters, with equal intervals between the different lines of letters, but preserved most of the Snellen lines and the shape of the Snellen letter. The lines of letters were arranged on slats so that they could be reversed and thus bring a fresh series of letters into view. The letters had been drawn with great care

so that they did not vary more than 1 1,000 of an inch from the calculated sizes. The letters were also lighted with a constant electric light to insure even illumination.

"Subconjunctival Salt Injections." DR. S. D. RISLEY, Philadelphia.

The writer said that subconjunctival injections of weak solutions of sodium chlorid were efficient and preferable to solutions of the salts of mercury. The method employed and the ocular affections in which the injections had proved useful were considered.

Discussion.—Dr. William Zentmayer, Philadelphia, said that while the injections produced no permanent disastrous results they did not often cause disagreeable results.

Dr. L. H. Taylor, Wilkesbarre, asked if the immediate clearing of the cornea was permanent, or only temporary.

Dr. Jno. E. Weeks, New York, considered that the beneficial results were due to change in the circulation of the blood and lymph, as suggested by Dr. Risley.

Dr. A. E. Bulson, Fort Wayne, thought the reaction depended upon the depth of the injections and considered the superficial injection just underneath the conjunctiva just as efficient as the deeper ones. The reaction might also depend upon the frequency with which the injections were repeated. Some patients seemed peculiarly susceptible.

Dr. S. L. Ledbetter, Birmingham, Ala., had given up the use of the mercury salts in favor of the normal salt solution and found the results more favorable.

Dr. Leartus Connor, Detroit, thought the results depended not alone upon the relation of the fluids, but also upon the irritation of the nerves and the reflex action upon the size of the blood vessels and the rapidity of the currents through them.

Dr. Kaspar Pischel, San Francisco, thought that American patients did not stand the pain produced by the injections as well as the European patients and that they complained much more frequently.

Prof. Hirschberg, Berlin, saw a great many American patients and could see no decided difference between them and the European patients as to the manner in which they received the treatment. He used the injections exactly as did Dr. Risley and in thousands of cases had not seen a single patient complain.

"Sympathetic Inflammation Following Panophthalmitis." DR. WILLIAM ZENTMAYER, Philadelphia.

Harmlessness of panophthalmitic eyes was the generally accepted

few until the publication of Alt's paper in 1876. The reported cases were analyzed. Schirmer's opinion, based on two cases, was that a purulent plastic condition is present in panophthalmitic exciting eyes. This view was supported by Ruge, but later combated by Ahlstrom. The analysis of the reported instances tended to confirm the view of Schirmer. The author's case was one of panophthalmitis after cataract extraction, followed by sympathetic inflammation resulting in blindness.

"Non-Toxic Amblyopia." DR. T. W. MOORE, Huntington, W. Va.

The writer deemed it of advantage to consider the cases under three heads—amblyopia exanopsia, hysterical amblyopia, and an-esthesia of the retina. The latter was subdivided into two classes—those of unknown cause and those due to traumatism. Their differential diagnosis was considered. In the treatment of amblyopia exanopsia the advantages of the convex glass cure according to Frommuller was spoken of. In the treatment of the anesthesias the use of electricity and the values of the galvanic, faradic and high frequency currents were considered.

"Amblyopia Caused by Wood Alcohol." DR. C. S. G. NAGLE, San Francisco.

The author called attention to eye symptoms and manifestations not referred to in the paper by Buller and Wood and reported a case presenting certain peculiar features not previously mentioned in reported cases. Anatomically the blindness was due to ischemia retinae. He recommended iridectomy, or at least keratotomy as lowering the intraocular tension and improving the circulation.

"Experimental and Clinical Evidence of Dynamic (Spastic) Astigmatism. Practical Conclusions." DR. F. B. EATON, San Francisco.

Difference of opinion on the subject the writer thought due to ignorance or doubt concerning essential facts. He referred to Dr. George Martin's careful and exhaustive study of subjective symptomatology and the difficulty of studying his evidence owing to his method of marking his trial frame and astigmatic dial. In his clinical findings he referred to, tonic (renitentes), clonic (elastiques), and resistant (resistantes), contractions. Martin disavowed intention to assume that these contractions are portions of ciliary muscle, but that its contractions sometimes rendered the lens more convex in some directions. The opposition of George Bull and Tscherning to Martin's views was commented upon and the support of Martin's views by Landolt, Javal, Dobrowelsky and

Eaton. Experiments, objective and subjective on the author's own eyes: (1) evidence implicating the accommodative apparatus; (2) implicating the extraocular muscles. Necessity of the most complete cycloplegia possible was insisted upon.

Discussion.—Dr. W. C. Posey, Philadelphia, thought that the paper offered a satisfactory explanation of failure to relieve several cases he had had during the past year.

“A Case of Melanotic Sarcoma of the Choroid.” DR. L. H. TAYLOR, Wilkesbarre, Pa.

The author's patient suddenly developed hemorrhagic glaucoma and the eyeball was enucleated on account of this condition. Microscopic examination showed pigmented sarcoma. There was no return in the orbit, but the patient subsequently died of sarcoma of the liver.

Prof. J. Hirschberg, Berlin, read a paper on “A Contribution to the Etiology of Pigmented Sarcoma of the Choroid.”

The society then adjourned.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, June 8, 1905.

John Tweedy, F. R. C. S., President, in the chair.

Messrs. R. W. Doyne and Sydney Stephenson read a paper on “Cribiform Choroido-Retinitis, a Rare Form of Fundus Disease.” They described three cases in adult patients of a peculiar clinical type of choroido-retinitis, characterized by large sheets of white exudation, lying in the fundus beneath the retinal vessels, and showing few or many round or oval holes, through which the color and markings of the underlying choroid could be recognized. In some instances the holes might be filled with pigment. There were grounds for thinking that the affection had resulted from acquired syphilis. The authors rejected the view that the condition of the fundus was the outcome of the metamorphosis of copious hemorrhages.

Mr. Leslie Paton read a paper on the course of optic neuritis and its subsidence after operation in cases of cerebral tumors, and in it he analyzed a series of 105 cases which had occurred at the National Hospital during 1903 and 1904. Of these cases there were 30 in which it was possible to examine more or less fully the eye condition after operation and these cases fell in four groups as regards vision. (1) There were 8 cases in which the vision

was little, if at all, impaired. (2) In 11 cases the patients were blind or almost blind before the operation and afterwards their vision recovered, in some even up to normal acuteness of sight. In Group 3 were those cases which were practically blind at the time of the operation and which regained no vision (6 cases), and also those in which the vision failed markedly in spite of the operation (2 cases), giving a total of 8 cases out of 30 operated upon which did not save the sight. In Group 4 were 3 cases in which one eye retained good vision while the other became blind or nearly so. A notable symptom in these cases was attacks of transient dimness of vision, which occurred most frequently in the cerebellar cases, and were most probably dependent upon interference with the vascular supply of the occipital lobes.

In different cases the optic neuritis showed different appearances, and the cerebellar cases showed more swelling of the disc than did those in which the tumor was situated in the frontal or parietal lobes, while macular changes appeared only in a small number of cases, and even when these were present they were not necessarily associated with any interference of vision; this is in favor of the changes being superficial. The intradural tension was in all cases high. The swelling of the disc subsided gradually, but more rapidly in cystic cases, while in those which led to blindness, the disc assumed a papery white appearance, with arteries much diminished in size. In some cases where the sight was retained the disc had usually a muddy, grayish-pink appearance, but this tended to disappear, and in some of the cases it was impossible to tell from the appearance of the disc that there ever had been optic neuritis at all: this was so in one case where there had been extensive macular changes, but the vision recovered to 6/6.

Mr. L. Werner, Dublin, described the case of a boy, aged 18, the sight of whose right eye had been failing for nine months before being seen, and black spots were lately observed upon the iris. When seen the iris was covered with coal black spots of pigment, less marked above, and in addition there was a small brown tumor wedged into the angle of the anterior chamber, at the outer side. The A. C. was deep, although the tension was high, and there was a deep glaucoma cup, the vision was "hand movement" only. The eye was enucleated and the patient remained in good health one and one-half years after the operation. The tumor was a spindle-cell melanotic sarcoma, which affected the ciliary body, and the neighboring parts were infiltrated with pigment cells which extended into the canal of Schlemm. Black cells extended into the angle of the anterior chamber, and a large number of detached

cells were lying loose at the bottom. The case was a typical example of a ring sarcoma of which about seven cases have previously been recorded.

Mr. Cant, Jerusalem, read a paper on the use of strong applications in the treatment of ophthalmia. He said that in Palestine, among the numerous practitioners, both qualified and unqualified, there were many methods employed in the treatment of ophthalmia, and among them were very strong solutions of nitrate of silver. One practitioner informed him that he applied it to the eyes in a solution of 20 per cent., while he himself had seen a prescription in which a solution of 60 grains to the ounce was ordered.

These exceedingly strong solutions are productive of a great deal of injury to the eyes, lids and conjunctiva, which they so damage that necrosis takes place and this favors, rather than retards, the development of organisms that may survive or else become subsequently inoculated into the eye. Such treatment precludes the further use of this most useful drug, and he urged that it was never advisable to use a stronger solution than 20 grains to the ounce, and seldom should one go beyond 15 grains, or 3 per cent., while a 2 per cent. solution is the most useful strength for the majority of cases.

Mr. Richardson Cross described the microscopical appearance of a tumor he had removed by Kronlein's operation from a patient who was shown at a previous meeting of the society who suffered from a tumor of the orbit. He gave details of the operation, and the growth was proved to be a fibro-adenoma containing cysts.

Dr. G. A. Berry read a paper on "Visual Efficiency." He considered that indemnification to sight after injury was in many respects unsatisfactory to both parties, there being no recognized scale according to which compensation can be calculated. He pointed out that it was impossible, having regard to the different value of good eyesight to different individuals, to formulate an invariable scale of efficiency. He proposed that a scale of efficiency that possessed some elasticity or adaptability to different conditions, which correlated efficiency with visual acuteness, as tested by the recognized methods, might be established on the basis of certain statistics which could probably easily be got. Such a scale was proposed as a guide. The first thing to determine was the degree of vision in one eye alone which just corresponded, for any particular employment, to a complete loss of efficiency. The second was the average loss, for different occupations, in efficiency, caused by complete loss of vision in one eye alone, the other having full

vision. The total efficiency, taking the vision of both eyes into account, was then discussed as a particular function of the separate efficiencies of each eye.

THE SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

Regular Meeting, held May 18, 1905.

The President, Dr. K. Pischel, in the chair.

Dr. L. C. Deane spoke upon "The Misuse of Atropin in Eye Diseases." He pointed out the fallacy of the indiscriminate use of that drug and emphasized the fact that when used, the smallest possible quantity to produce the desired effect was all that was necessary. He recommends scopolamin in a number of cases and particularly so in refraction.

Dr. F. B. Eaton agreed that the speaker had taken a very "happy medium," and said that he was equally cautious in using the drug, even in diseases of the uvea, providing there was increased tension. He protested against the use of strong atropin solutions in Descemetitis, finding that the trouble was made worse, and spoke of the success attending the long-continued use of weaker solutions. In reference to the cycloplegic use of the drug, he said the following: "I think more oculists than are generally supposed are in favor of complete cycloplegia. The avoidance of a strong cycloplegia in young persons prevents getting strong enough glasses on the patient. I feel that it is more logical to get at the absolute refraction of a patient who is under 35 years of age, and frequently of those much over that age. The doctor spoke of using 1/10 per cent. solution of scopolamin. I always use a 1/4 per cent. solution of hyoscine hydrobromate, using one drop three times a day. I give the bromids at the same time, and usually instil a few drops of adrenalin and cocain, finding that the cocain enables me to get along better when the conjunctiva is irritated."

Dr. Martin has seen cases where the prolonged use of the weaker solutions has had but little effect, while a strong one, say 4 per cent., if carefully used, will produce immediate and lasting effect. He does most of his refraction with euphthalmin, i. e., in adults, and gets satisfactory results. He finds it advantageous to have the patient fix a small light twenty feet distant, during retinoscopy.

Dr. W. Scott Franklin: I would like to say a few words against the practice of putting a drop of any mydriatic into an eye without first examining the fundus and ascertaining the condition of the

nerve head. A number of cases of acute glaucoma have been brought on, in eyes predisposed, by this lack of caution. In regard to the use of strong solutions of atropin, I at times use the concentrated powder and have no ill results, as the patient is told to compress the canaliculi with the tip of his finger, thereby avoiding the danger of too rapid absorption.

Dr. K. Pischel thinks that the conjunctivitis is caused principally by the use of old solutions. He has found that in some cases of iritis the atropin solution has not affected the pupil until after the application of leeches.

Dr. Deane, in closing the discussion, said that the idea of his paper was against the promiscuous use of atropin. He directs his patients to return after the expiration of four days when using scopolamin as a mydriatic, and thinks that the difference of opinion regarding the strength of the solution depends upon the mode of application, etc. He always warms the drop before instilling it, and does not use cocain or atropin solutions after they are a day old.

The selection of the anesthetic in ear, nose and throat operations was the next subject, the discussion being opened by Dr. Martin. (Paper appears elsewhere.)

Dr. Card believes that the safety of an anesthetic depends greatly upon the person giving it. He has had some cases, in adults, where during the administration of ether spasm of the glottis occurred and it was necessary to change to chloroform.

Dr. Eaton fears chloroform through personal experience. He has never seen a person in danger from ether, but on many occasions has had scares during the administration of chloroform. The doctor deplored the fact that the giving of anesthetics was not taught in colleges. He objects to chloroform during adenoid operations, as here it is particularly dangerous owing to the obstruction to breathing. He said that the bromid of ethyl is dangerous compared to the chlorid, and for a short anesthetic he preferred nitrous oxide.

Dr. Franklin: It is surprising how the nose and throat differ in their susceptibility to cocain. I have known of cases where but a few drops of a 2 per cent. solution was used in the nose, the patient collapsing. In the throat one may use up to 20 per cent., even in children. In the nose it is rarely safe to use over a 4 or 5 per cent. solution and in a spray over $1\frac{1}{2}$ per cent.

Dr. Deane: I have used chloroform in the majority of my adenoid cases as the most ready anesthetic and easily administered, and I have never had any trouble with it.

Dr. Frederick: Having received my medical training abroad, where chloroform is used almost exclusively, I have always used it myself, with very few exceptions. Using prolonged narcosis for these short operations, however, seems to me like shooting at a sparrow with a cannon, and I therefore welcome the idea of the shorter narcosis, such as nitrous oxide, which is ably administered by most dentists. I have done several cases under Narcotile-Bengue. With this narcotic it takes four or five minutes from the time the patient is put on the table until he is thoroughly awake and ready to be dressed, twenty to thirty seconds being, as a rule, sufficient to produce enough anesthesia for the operation.

Dr. Martin: The gist of my paper is, you may see, the plea for the recognition of the professional anesthetist. That we, as operators, should be freed, as far as possible, from the responsibility of the anesthetic. I have seen three deaths from chloroform during operation, two of elderly people and one of a girl of 14, but have seen none occurring during adenoid operations. I do not use local anesthesia in children. In adults I use 12½ per cent. solution of cocain applied locally on cotton for 15 to 20 minutes, and for septal work or opening the antrum have found a 5 per cent. solution applied to either side with a current of 5 ma. work quickly and effectively.

W. SCOTT FRANKLIN, Secretary.

Notes and News.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.—The following is a partial list of the papers that will be read before the Ophthalmic Section at the Buffalo meeting September 14, 15, 16. Meetings will be held at the Hotel Lennox, corner North street and Delaware avenue:

Thomas Faith, Chicago—Interstitial Keratitis Excited by Traumatism.

Francis Valk, New York City—Dextrophia.

Edward J. Bernstein, New York City—Advancement Operation vs. Tenotomy.

Lucien Howe, Buffalo, N. Y.—Clinical Measurement of Torsion with Convergence.

John E. Weeks, New York City—Diabetic Myopia.

Joseph E. Willets, Pittsburg, Pa.—Fixed Fallacies.

George F. Keiper, Lafayette, Ind.—Bacteriology of Dendritic Keratitis.

William F. Mittendorf, New York City—Advancement of Capsule of Tenon in Marked Cases of Divergent Squint.

D. W. Greene, Dayton, Ohio—Some of the Accidents and Complications Met With in the Extraction of Cataract.

Edward B. Heckel, Pittsburg—Report of a Case of Electric Ophthalmia.

K. K. Wheelock, Ft. Wayne, Ind.—Ocular Changes in the Pre-pubertic Child.

George M. Gould, Philadelphia—Study of Failures in Ophthalmic Practice.

C. Barek, St. Louis, Mo.—Open Treatment or Dressing After Intraocular Operations.

L. R. Culbertson, Zanesville, Ohio—Report of Case of Quinin Amaurosis.

Theo. B. Schneideman, Philadelphia—Spontaneous Hemorrhage Into the Vitreous.

Adolf Alt, St. Louis, Mo.—The Pinguicula and Pterygium.

Edward Jackson, Denver, Colo.—The Mechanism of Accommodation and Astigmatic Accommodation.

Elliott Colburn, Chicago—Title to be announced later.

Wm. Gamble, Chicago—Report of a Case of Tubercular Iritis.

Thomas Woodruff, Chicago—Changes in the Retina as an Aid to the Diagnosis of Vascular Degeneration.

Nelson Black, Milwaukee, Wis.—Advantages and Disadvantages of Glasses in Railway Service.

L. A. W. Alleman, Brooklyn, N. Y.—The Teaching of Ophthalmology in Undergraduate Medical Schools.

Wendell Reber, Philadelphia—Subject to be announced later.

Casey A. Wood, Chicago—Migraine.

James A. Spalding, Portland, Maine—The Relations Between the Medical Practitioners and the Specialist in Diseases of the Eye.

Derriek T. Vail, Cincinnati, Ohio—Filaria Loa.

Frank Buller, Montreal, Canada—Address on Ophthalmology.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, SEPT., 1905. VOL. XIV. NO. 9. NEW SERIES

Original Articles.

MUSCLE TESTING IN REFRACTION.*

FRANK H. KOYLE, M.D., C.M.,

HORNELLVILLE, N. Y.

I hope it is with becoming modesty that I venture to present to you this evening the paper which has been announced to you as "Muscle Testing in Refraction."

I am afraid that this title is somewhat misleading. I am not going to ask you to follow me through the highways and byways of heterophoria which have been so thoroughly traveled by Stevens, Ranney and Savage. The former two of these gentlemen guide you in paths which lead inevitably to a graduated tenotomy. The last belies his name in assuring you that a gentler treatment will add luster to your fame.

Mine is a different mission. It is to present to you a method which I have been using for several years as an aid in the correction of errors of refraction.

As you all know, Hornellville is a small city whose citizens, for the most part, claim railroading, silk-weaving and glove-making as an excuse for living. These, with the citizens of neighboring towns and villages, necessarily constitute the majority of the country oculist's clientèle, and have their own views, fostered by the local soothsayers, whose name is legion, on the subject of atropin and other cycloplegics: and the results, from the oculist's point of view, are disheartening, to say the least.

It is with shame that I confess to you that, even in the supposedly enlightened civilization of Hornellville and Steuben County in general, there are but few of our citizens who will not, on having the subject of "belladonna" broached to them, oracularly relate the case of a friend who had had atropin used in his eyes and who had never thereafter been able to see distinctly without

* Read before the Buffalo Ophth. Club, February 9, 1905.

glasses. Explanations to this class of people are worse than useless, even if one discourses on the mild effects of homatropin and the difference between *manifest* and *latent* hyperopia; and the country oculist is, perforce, compelled to adopt the best method he can to secure the desired results. For these reasons I was early compelled to make investigations to see if I could not discover a method of developing a latent hypermetropia.

Realizing the far-reaching effect of irritation of the third cranial nerve, I was sure that the heterophoria found in so many cases must be dependent upon a certain degree of ciliary spasm, or, if you wish, latent hypermetropia. I then began a series of experiments with the phorometer and the Maddox rod, regardless of such considerations as adduction, abduction and sursumduction, to find out the exact relation between moderate degrees of hyperphoria and ciliary spasm. My experiments were tentative at first, perhaps you might almost call them empirical, but since then I have grown to rely on certain tests as being purely scientific, as I think you will see evidenced in the cases to which I shall allude.

It may be that I am asking you to listen to an old story. If so, my apologies are yours for subjecting you to the ennui of listening to this paper. Let me say, however, that I have not yet discovered in the literature on refraction any hint relating to the use of prisms, or the phorometer, or of the Maddox rod, as an aid in the correction of errors of refraction. Now, as to the method:—

In the first place, after attending to the details of history, etc., I follow the usual plan of recording vision with the distance type. I then try to see if the patient is benefitted with *plus* sph. lenses. If so, more *plus* is added, to the limit of clear vision. Next, I try to see if *plus* cylinders will further improve the vision. Failing perfect vision for distance I then try *plus* cylinders alone. Arriving at the limit of clear vision for cylinders, being sure that the vision of the right is equal to that of the left eye, I reverse the first mentioned plan and now add sphericals, which may or may not be accepted. If they are, I add them to the limit of clear vision, often finding that, although sphericals were at first refused, they are easily accepted after the cylinders have allayed ciliary irritation. If, on the contrary, sphericals are refused, I know that something is wrong and proceed at once with the retinoscopic test. This may, or may not, show a condition of compound hyperopic astigmatism, although in most cases it is possible to get fairly correct results, even without a mydriatic.

Whether the sphericals are accepted or refused, I now begin testing for heterophoria with either the phorometer or a Maddox

rod, first without any correction on, and then with the fullest correction I have already found.

My investigations show that, in every case where there is the least trouble in securing perfect distant vision there is a heterophoria present. Hence, if the lenses used have improved the vision, it will usually be found that they have also lessened the amount of heterophoria.

Assuming that *plus* sphericals were at first rejected, while *plus* cylinders were accepted, I now leave the cylinders in the trial frame and, with the phorometer still in position, either for vertical or lateral heterophoria, whichever has been found, and begin to add sphericals in ascending strength.

I may say that where there are both vertical and lateral heterophoria I make it a rule to correct the vertical first, since that I have found that very frequently the lateral imbalance is dependent upon the vertical and disappears with it. Now, when enough spherical has been added to secure vertical orthophoria, I notice whether this amount has also corrected the lateral. If not, enough more *plus* is added to produce lateral orthophoria. When this is found I reverse the prisms to see if I still have a vertical balance, and this I have always found to be the case.

The phorometer is now removed, and the patient immediately requested to read (in my office) the 15/10 type. If he fails to do so after looking intently for a reasonable time, I slowly reduce the spherical correction until he can. The phorometer being again brought into requisition, there is either a perfect equilibrium or there is not. If not—there is still a latent hyperopia. If the imbalance found is principally vertical, the prisms are turned to indicate *hyperphoria*, and the patient, with his full correction on, requested to keep looking at the candle flame. In a few minutes more spherical is added, and it is now usually found that it requires more spherical than was at first used to secure equilibrium, an amount probably equal to that required to produce lateral orthophoria.

On now removing the phorometer, it will be found that the patient reads 15/10 easily. Not only this, but he will read Jaeger No. 1 with an amplitude of accommodation of from 6 to 20 inches.

This, in brief, is the method which, so far as I know, I have originated. Time does not permit me to elaborate some of the details as I would like to, but I hope I have gone into the subject sufficiently and clearly enough to show the reasonableness of my scheme for developing latent hyperopia *without the use of cyclo-*

phlegics. And now, with your permission, I shall proceed to read to you some illustrative cases.

CASE 1.—Miss M. S., Williamsport, Pa., age 43. Housekeeper. An unusually severe case of migraine. R. V. 15/30 + and 15/10 + with 0.75 D. S. \ominus + 0.75 D. C. ax. 75°. L. V. 15/30 + and 15/10 with + 1.25 D. S. \ominus + 0.25 D. C. ax. 90°.

With this correction on L. H. = $1\frac{1}{2}^{\circ}$ and Exo. = $13\frac{1}{4}^{\circ}$.

Refuses more spherical correction and apparently demands + 0.75 D. S. presbyopic lenses.

With phorometer in position + 0.50 D. S. was added to each eye, but making no changes in the foregoing phorometric findings.

Vision now was 15/10. with O. D. + 1.25 D. S. \ominus + 0.75 D. C. ax. 75°; O. S. + 1.75 D. S. \ominus + 0.25 D. C. ax. 90°, and O. D. = O. S.

To this correction + 0.50 D. S. was added, giving V. O. Exo. = 2°, and V. 15/10.

This being evidently an overcorrection the + 0.50 lenses were changed to 0.25 D. S. and immediate orthophoria was obtained. Vision was now found to be 15/10 : O. D. = O. S. and near vision J 1 at 13 inches. In this case it is seen that, *by means of the phorometer*, exact findings were found which gave perfect distant and near vision as well as orthophoria, the *lateral hyperopia becoming manifest as soon as perfect adjustment of the external muscles was obtained*.

CASE 2.—Mr. H. D. R., age 20, student, Lima N. Y. Asthenopia. R. V. 15/10 and 15/10 with + 0.50 D. S. \ominus + 0.25 D. C. ax. 75°. L. V. 15/10 and 15/10 with + 0.50 D. S. \ominus + 0.25 D. C. ax. 105°. Refuses further sph. correction.

With this correction on the phorometer shows R. H. $1\frac{1}{2}^{\circ}$: Eso. 1°. With phorometer still in position + 0.25 D. S. was added, inducing immediate orthophoria. Vision was now found to be 15/10 and O. D. = O. S.

CASE 3.—Miss F. M. S., age 25, teacher. General health good. Has headaches only when eyes are subjected to unusual amount of work. No occipital pain. Has worn glasses for six years. R. V. 15/20 + and 15/10 W. + 0.50 D. C. ax. 75°. L. V. 15/20 + and 15/10 W. + 0.50 D. C. ax. 90°.

With this correction on the phorometer shows R. H. $1\frac{1}{2}^{\circ}$: Eso. $1\frac{1}{2}^{\circ}$. Sphericals were now added to the cylindrical correction already found (this always being done with patient behind the phorometer), orthophoria being induced when + 0.50 D. S. was added. Leaving this combination in the trial frame and the phorometer

being removed, the patient was now found to read 15 10 with either eye with the compound lenses.

CASE 4.—J. R., age 23, law student. Canaseraga. Asthenopia. R. V. 20/15 \times and 20/10 W. + 0.25 D. C. ax. 90° L. V. 20 15 — and 20/10 W. + 0.25 D. C. ax. 90° . Refuses sph. correction. Without any correction phorometer shows exo. 2° .

With above correction, phorometer shows exo. 1° , but when + 0.25 D. S. was added to each eye equilibrium was established. Patient now accepted spherical correction, reading easily 20 10 with each eye.

CASE 5.—Mrs. A. H. R., age 63, Angelica, N. Y. Eyeache. Asthenopia. Has worn compound prismatic glasses for 5 years, each lens having 2° of prism, base in. Without glasses phorometer shows ex. 7° . R. V. 15/30 + and 15/10 W. + 0.50 D. S. \odot + 0.75 D. C. ax. 180° ; L. V. 15/30 — and 15/10 W. + 1 D. S. \odot + 1 D. C. ax. $15^\circ = 15/10 =$ orthophoria.

It is fair to say that the lenses this patient had been wearing—leaving the prisms out of account—were anything but right; but it is peculiar that perfect equilibrium should be so easily obtained after she had been wearing such fairly strong prisms for 5 years.

CASE 6.—Mrs. E. A. P., age 35, Belmont, N. Y. Housekeeper. Pain in occiput; *stiff* feeling of eyes; blurred vision. R. V. 15/10 and 15/10 W. + 0.50 D. C. ax. 90° . L. V. 15/10 and 15/10 W. + 0.25 D. C. ax. 90° . Refuses spherical correction.

Phorometer shows L. H. 1° : lateral muscles balanced. With aid of phorometer plus lenses up to 1 D. were added when the L. H. was found to have disappeared. Leaving this correction on and removing the phorometer, the patient now accepted the compound correction.

CASE 7.—Mr. F. B. P., age 31, Cohocton, N. Y. Manufacturer. Asthenopia. R. V. 15/15: 15/10 W. + 0.50 D. C. ax. 90° . L. V. 15/15 + and 15/10 W. + 0.50 D. C. ax. 105° . O. D. = O. S. Spherical lenses refused.

With above correction on, a Maddox rod¹ added shows exo. 1° . Plus lenses were now added, leaving all the foregoing in the trial frame, and when + 0.50 D. was reached the exo. had disappeared. Removing the Maddox rod, the patient was now found to accept the spherical lenses in addition to the cylinders, reading 15/10 easily with each eye and V. O. D. = V. O. S.

1. This case is used to illustrate the fact that the Maddox rod can be utilized as well as the phorometer in aiding in the correction of, as well as determining the proof of, the proper correction of errors of refraction.

For near work this correction also showed an amplitude of accommodation of 6.19 inches.

CASE 8.—Mr. W. T. M., age 45, Pres. Gas Corp'n, Penn Yan, N. Y. Asthenopia. R. V. 15/10 — ; L. V. 15/10. Refuses all spherical and cylindrical correction.

An examination of the muscles with a Maddox rod reveals an L. H. of $1\frac{1}{2}^{\circ}$ and exo. of 1° , the former being corrected with + 2 D. over both eyes; the latter with + 0.50 D. Believing the L. H. to be largely *due to a spasm of accommodation* the + 2 D. lenses were left on for an hour when it was found that + 0.50 D. produced orthophoria and was now accepted as the correction for the refractive error.

CASE 9.—C. J. Mc., age 24, stenographer. Hornellsville, N. Y. "Fluttering" of right eye; pain in eyeballs after close work; no occipital pain. R. V. 15/10 and 15/10 W. + 0.75 D. S. \odot + 0.25 D. C. ax. 105° . L. V. 15/10 and 15/10 W. + 1 D. S. No further + correction tolerated.

With this correction the phorometer shows R. H. $\frac{1}{2}^{\circ}$. Exo. 2° .

With phorometer left in position, + lenses were added to above to correct, *first*, the hyperphoria. This was accomplished with the addition of + 0.75 D., which also corrected the lateral heterophoria and was easily accepted for distant and near vision.

CASE 10.—Miss H. H., age 16, student. Hornellsville, N. Y. Headache. Neurasthenia. R. V. 15/15 and 15/10 W. + 0.25 D. C. ax. 180° . L. V. 15/20 + and 15/10 W. + 0.50 D. C. ax. 180° . Refuses spherical correction. Refuses mydriatic.

Without any correction, phorometer shows L. H. $\frac{1}{8}^{\circ}$, eso. $11\frac{1}{2}^{\circ}$, but + 0.50 D. S. added to above cylinders = orthophoria. Patient now readily accepts the spherical correction in addition to the cylinders and eyes feel comfortable.

CASE 11.—Mr. W. H., age 42, railway engineer. Hornellsville, N. Y. Pain in left eye. Ocular and palpebral conjunctivitis. Large pinguecula of left eye. R. V. 15/10 — and 10/10 W. + 0.50 D. S. L. V. 15/10 and 15/10 W. + 0.25 D. S.

With this correction on patient shows with Maddox rod a *left hypophoria* of $\frac{1}{2}^{\circ}$ and eso. $11\frac{1}{2}^{\circ}$.

The spherical correction was then abandoned for the time being, and an attempt made to find a suitable cylindrical correction. It was finally found that the right eye accepted + 0.50 D. C. ax. 15° , and the left eye + 0.25 D. C. ax. 165° . With this to allay ciliary irritation it was at once possible to add + 0.50 D. S., giving perfect vision and orthophoria.

This case is given principally to show that where a low error

of refraction is evidenced and there is an attendant lack of muscle equilibrium, it will be found that weak cylinders will form the basis for a rapid and correct solution of the correction of the refractive error, as well as the elimination of associated ocular symptoms requiring attention.

CASE 12.—Mrs. W. H. H., age 32, housekeeper. Clairmont, Va. History of blurred vision; eyes give out after an hour's close work. R. V. 15/10 and — 15/10 W. + 1 D. S. L. V. 15/10 and — and 15/10 W. + 1 D. S. Both = 15/10 = J/1 at 13 inches.

Phorometer shows R. H. $1\frac{1}{2}^{\circ}$, corrected with above lenses; and eso. 2° , requiring an added + 1 D. to correct. With + 2 D., however, vision was only 15/15 +.

This correction was worn for an hour, after which it was found that + 1.50 D. S., both, gave V. 15/10 = J/1 = orthophoria.

This case illustrates the fact that a certain amount of heterophoria may be caused by ciliary spasm, on relieving which the pseudo-heterophoria disappears.

CASE 13.—Mrs. C. W. G., age 24, housekeeper. Occipital pain; eyes feel drawn. R. V. 15/100 and 15/50 W. + 4.0 D. C. ax. 105° . L. V. 15/100 and 15/40 W. + 4.0 D. C. ax. 75° . Both = 15/30 —.

Without correction phorometer shows V. O. : Exo. 1° .

With above correction, phorometer shows V. O. : L. O. After thorough atropinization each eye was found on retinoscopic examination to be hyperopic 7.50 D. in one meridian and 2.25 in the other. Thus V. was: O. D. 15/200 and 15/40 W. + 2 D. S. \odot + 4 D. C. ax. 105° . O. S. 15/200 and 15/40 W. + 2 D. S. \odot + 4 D. C. ax. 75° . Both = 15/30 +.

In this case it is seen that although the visual acuity is so low, it is possible by correcting the refractive error to establish orthophoria.

CASE 14.—Mr. J. R., age 33. Cohocton N. Y. Asthenopia. Flatulent dyspepsia. R. V. 15/10. L. V. 15/10. Refuses all spherical and cylindrical correction.

A retinoscopic examination without a mydriatic showed O. D. + 0.75 D., axis about 60° for one meridian, and + 0.50 D. at right angles to this O. S. + 0.75 D. for the meridian of about 135° and + 0.50 D. with that at right angles to this.

Notwithstanding these findings he refused all correction and declined a mydriatic.

The phorometer showed R. H. 1° : eso. $24\frac{1}{2}^{\circ}$. With phorometer still in position *plus* lenses were dropped into the trial frame. On reaching 1 D. the R. H. was found to have been corrected, but not

the eso. A $+ 0.25$ D. lens was now added to O. D. with no result, but on being added to O. S. the eso. was found corrected.

Although this correction, $+ 1$ D. S. for O. D. and $+ 1.25$ D. S. for O. S. was found to produce equilibrium of the muscles; a comparison of the vision of the two eyes revealed the fact that the vision of the right was somewhat better than that of the left eye.

The findings of the retinoscopic examination were now used and the patient accepted $+ 0.25$ cylindrical for each eye, the addition not altering in the least the orthophoria already found, and V. of O. D. = V. of O. S.

The summary of this case shows: V. O. D. = $+ 1$ D. S. $\ominus + 0.25$ D. C. ax. 135° . V. O. S. = $+ 1.25$ D. S. $\ominus + 0.25$ D. C. ax. 45° . O. D. = O. S. = J/1 = orthophoria.

It will be easily seen that with the exception of the cylindrical correction this patient was practically fitted by means of the phorometer.

CASE 15.—Miss M. C., age 35, employe in silk glove factory, Hornellsville, N. Y. History of neurasthenia, asthenopia and asthma. R. V. $15/15$ — and $15/10$ W. $+ 1.25$ D. S. $\ominus + 0.25$ D. C. ax. 75° . L. V. $15/10$ — and $15/10$ W. $+ 0.50$ D. S. $\ominus + 0.25$ D. C. ax. 90° . V : — O. D. = O. S. = J/1 at 7-19 inches.

With this apparently full correction, the slightest additional *plus* causing blurring, one would expect a balance of the muscles. This, however, was not the case, the phorometer showing with this correction an exo. of 1° . When, now, $+ 0.25$ D. S. was added, a perfect equilibrium was secured, acuity of vision also being unimpaired.

CASE 16.—Mrs. J. G. W., age 42, housekeeper, Wellsville. Asthenopia. Has worn astigmatic lenses for eight years. Some years ago had a graduated tenotomy of both ext. recti.

Phorometer shows R. H. 1° : Exo. 1° . R. V. $15/15$ — and $15/10$ — W. $+ 0.50$ D. C. ax. 150° . L. V. $15/15$ + and $15/10$ — W. $+ 0.50$ D. C. ax. 45° . Both = $15/10$ —.

The above phorometric findings were still found to obtain with this correction, but with $+ 0.75$ D. S. added, orthophoria was induced.

Frequent reports from this patient, since being fitted with these lenses, are to the effect that her asthenopia is a thing of the past. The question in my mind is, was there any necessity for that graduated tenotomy in the first place?

CASE 17.—Mr. J. G., age 50, lawyer, Hornellsville. Asthenopia. Neurasthenia. R. V. $15/10$ and $15/10$ W. $+ 0.25$ D. C.

ax. 180° . L. V. 15 10 and 15 W. + 0.25 D. C. ax. 165° . Both = 15/10.

Without correction phorometer shows: V. O. Exo. $11\frac{1}{2}^{\circ}$. Maddox rod: V. O. Exo. $11\frac{1}{4}^{\circ}$.

In this case the addition of weak sphericals produced a very slight diminution only in the exophoria and caused blurring for distance and a severe pain in occiput. The patient then volunteered the information that he had been under muscle treatment at the hands of Dr. ——— of Philadelphia, several years ago, but with little improvement.

I then examined the strength of his muscles and found the following: Sursumduction $\frac{1}{2}^{\circ}$, abduction $11\frac{1}{2}^{\circ}$, adduction 3° .

With this low adduction, together with a correspondingly much stronger abduction, it was no wonder that he had an unconquerable, though low, degree of exo. This patient was requested to wear the cylinders referred to above and was put on strychnin, and requested to report in one month.

April 1, 1904, when he reported, the muscles were not materially improved and rhythmic exercises were advised and practiced. Sursumduction at once went up to 1° , abduction to 5° , and adduction to 9° .

On April 2, abduction was 5° , adduction 21° ; on April 5, abduction was 7° , adduction 30° ; on April 25, abduction was 8° , adduction 40° , and at this time a condition of orthophoria obtained. When this patient reported April 1, he thought the glasses had not benefited him any. When, however, he had had his muscles exercised and strengthened he was able to wear his glasses with comfort.

CASE 18.—Miss E. Mc. C., age 30, teacher. Hornellsville, N. Y. Asthenopia. This young lady had been compelled to give up her school work for the past two years on account of her eyes. Has worn compound lenses for 6 years. R. V. 15/15 — and 15 10 — W. + 1 D. C. ax. 90° . L. V. 15 and 15 W. + 2 D. C. ax. 105° .

Prorometer shows R. H. 1° : Eso, 4° with above correction on. With phorometer in position *plus* sphericals were added, first to right eye and then to left, with the result that the esophoria was not influenced by the addition of the sphericals over the *left* eye, while, when added to the *right*, 1 D. induced L. O. As there was still a R. H. of $1\frac{1}{2}^{\circ}$ more + was added until 1.50 D. altogether had been added.

This was found on repeated tests to give orthophoria. Here we find that with the addition of a + 1.50 D. lens to the right eye

only, the cylindrical correction of both eyes having been found, the result is a perfect equilibrium of the muscles. It was also found that the vision of each eye was now 15/10 and that the V. of O. D. = V. of O. S. and there was a complete absence of all strain.

You will have noticed that all the cases which I have presented are cases of hypermetropia or hypermetropic astigmatism. Whether the tests I have applied would be of equal value in myopia or myopic astigmatism I do not know, but I should judge that they would not, unless it be in low grades of myopia.

Outside the fact that I have seen comparatively few cases of ciliary spasm in myopes, I suppose the main reason is that 95 per cent. of my cases have been those of simple hyperopia, and simple or compound hyperopic astigmatism.

You will also have noticed that when I have secured orthophoria for distance I have been satisfied with the results, providing the *near* reading test was satisfactory. In the many cases which I have investigated, for the most part young hyperopes, I have learned that heterophoria in accommodation is eliminated, or else is a negligible quantity, when orthophoria and emmetropia for distance are secured.

I am aware of the fact that these illustrative cases are *seemingly* those in which only the manifest heterophoria is treated. This, however, is not the case. A certain amount of latent heterophoria, an amount certainly equal to the latent hyperopia, will always become manifest if the phorometer is left long enough in position before the patient's eyes.

199 Main St.

THREE UNUSUAL CLINICAL OBSERVATIONS: CHANGE IN ASTIGMATISM PRODUCED BY CHALAZION; CON- TACT KERATITIS AFTER CATARACT EXTRAC- TION; INHERITED AND ACQUIRED SYMPH- ILIS IN THE SAME SUBJECT.

HENRY DICKSON BRUNS, M.D.

Professor of Diseases of the Eye in the New Orleans Polyclinic, Surgeon-in-
Charge of the Eye Department, Eye, Ear, Nose and Throat Hos-
pital, New Orleans, La.

[Illustrated.]

CHANGE IN ASTIGMATISM PRODUCED BY CHALAZION.

It is now well known that the astigmatism, not only of a myopic but even of a hypermetropic eye, may undergo change. Lately it has been noted that the pull of a pterygium, or the change of ten-

sion produced by the division of the tendon of an orbital muscle may affect the astigmatism. That so slight a cause as the pressure of a small chalazion might also be effective has not, so far as I am aware, been recorded. The following seems to prove this beyond dispute.

In 1887 the refraction of the writer, then 22 years of age, was most carefully measured under repeated instillations of homatropine, by Dr. Howard F. Hansell, of Philadelphia; it was found to be R. $+ 0.50 \text{ C} + 0.50 \text{ c. ax. } 90^\circ$. L. $+ 0.25 \text{ s. C} + 0.50 \text{ c. ax. } 90^\circ = \text{V.}$ was 20/xv with each eye, and has always so remained. April 8, 1899, the astigmatism measured with the J. S. ophthalmometer was found to be R. E. 0.50 ax. 75° ; L. E. 0.50 ax. 105° . February 3, 1901, the same instrument gave an identical reading. In May, 1904, a small chalazion, about 3 or 4 mm. in diameter, developed, with moderate inflammation, in the upper lid of the right eye. At the same time the vision of this eye became uncomfortably dim at all distances. R. E. V. = 20/xxx, the outlines not clear cut, and while Sn. No. 4 could be read with the presbyopic correction, $+ 1.75 \text{ S. C} + 0.50 \text{ c. ax. } 90^\circ$, the print looked smeared and not as it appeared through the same glass with the left eye. Now, on May 27, 1904, very careful measurement with the ophthalmometer showed R. E. = O.; L. E. 0.50 ax. 105, and R. E. $+ 0.50 \text{ s. C} + 0.50 \text{ c. ax. } 165^\circ = 20/\text{xx}$. This condition lasted a month or two, when the chalazion began to disappear and gradually, very gradually, the vision for near became clear and comfortable with the old correction, and V. R. E. = 20/xv. To-day (April, 1905) the ophthalmometer shows in R. E. 0.50 ax. 75° once more.

CONTACT KERATITIS AFTER CATARACT EXTRACTION.

The following cases are reported because in twenty-two years of practice I have never seen the same thing before, nor have I found mention of it in the text-books; not even in the wonderfully comprehensive article by Knapp on the accidents, complications, and sequelae of cataract extraction in Norris & Oliver's "System." Strange to say, the complication arose in two cases operated upon the same day.

E. F. A., white, carpenter, 71 years of age, presenting an almost ripe, uncomplicated senile cataract of the right eye, the left eye being useless, was operated on in my clinic on February 3, 1905. The method employed was simple extraction under cocaine and adrenalin anesthesia, the capsule being opened with the point of the knife. No speculum was used, Angelucci's mode of fixation by grasping the tendon of the superior rectus being followed. There

was no accident beyond an almost invisible nicking of the iris in completing the section. Atropin having been instilled before the operation, the eye was filled with 10 per cent. argyrol, covered with a disc moistened with the same solution and closed with an absorbent cotton pad and flannel bandage. February 4, 1905: Patient allowed to come down stairs. Dressing removed. Eye perfectly clean; very little reaction; pupil is contracted and contains much capsular debris. The anterior chamber is still leaking, but there is no entanglement of the iris in the wound. Argyrol 10 per cent. instilled. Redressed. February 5, 1905: The eye continues to look well in all important respects, but at the center of the cornea there is a small area of interstitial infiltration, exactly resembling an old leucoma, about 3 by 6 mm. in size. The nurse says that the man pulls and picks at the dressing constantly, disarranging it. The anterior chamber is still unclosed. A cataract cage is substituted for the dressing and instillations of 10 per cent. argyrol ordered t. i. d. February 9, 1905: The opacity at the center of the cornea is larger. As the man has become steadily weaker and his general appearance worse since the operation, he is put on a bark, iron and strychnin tonic. February 10, 1905: Greatly improved. The anterior chamber is closed for the first time. The pupil is dilating under the atropin which has been instilled once daily, and the capsular remains are breaking up. The leucoma-like spot has become thinner, assuming the appearance of a surgical keratitis (striped infiltration) at the center of the cornea, but is completely surrounded by a large, clear zone, extending on all sides to the corneal limbus; with oblique light and Berger's binocular loupe, a triangular bit of capsule can now be seen to be in contact by its apex with the posterior surface of the cornea opposite the area of infiltration. Before the anterior chamber was restored the area of contact must have been much greater. February 16, 1905: The fourteenth day after the operation. Cornea perfectly clear. Allowed to go home wearing cataract cages.

J. M., white, carpenter, 58 years of age. Came to the clinic January 27, 1905. He presented uncomplicated, senile cataracts in both eyes, that in left eye being almost, that in right eye quite mature. On February 2, 1905, under cocaine and adrenalin anesthesia, the right cataract was extracted by the simple method, the capsule being incised with the Graefe knife. No accident. The same dressing as the first case. It was observed that the pupil, which had been dilated by atropin the day before, showed little tendency to contract. February 4, 1905: Eye clean. Fine clear pupil only one-half contracted. There is no entanglement, but I

fear adhesion of the iris to the wound as the anterior chamber is not reformed. Argyrol, rebandage. February 7, 1905: Anterior chamber not closed. Discontinue bandage, and cataract cages put on. February 8, 1905: Although the clearness of the media was particularly noted yesterday, to-day a small area of infiltration, exactly resembling that in E. F.'s case, occupies the center of the cornea. The patient looks worn, pinched and feeble, and the nurse says he is suffering from nausea and diarrhoea. He is put on a strictly regulated diet. Instillations of 10 per cent. argyrol ordered t. i. d. February 9, 1905: The corneal opacity has not ex-



tended. Ordered a bark, iron, strychnin tonic. Allowed to go home wearing cataract cages. February 10, 1905: Decided improvement. The leucoma-like spot is now surrounded by a gray zone of delicate infiltration, in its turn embraced by a wide area of clear cornea, extending on all sides to the corneal margin. With the Berger's loupe and oblique illumination extremely fine strands of capsule can be seen running from every point of the pupil's circumference to an area on the posterior surface of the cornea, exactly behind the opacity. To ordinary inspection the pupil seems almost perfectly black and clear. To-day, for the first time, the wound is sealed and the anterior chamber restored. February 22,

1905: Cornea perfectly clear; the leucoma-like spot having first assumed throughout the appearance of a gray infiltration and then gradually faded away. Discontinued cataract cages and ordered 10 per cent. argyrol solution instilled twice daily.

It is needless to say that I was shocked and greatly worried when this complication suddenly appeared in two cases which seemed otherwise to be progressing toward an excellent result. The thing being utterly outside of my experience and reading, I was at a loss for a prognosis. I feared that useful vision would be lost by a lesion, of which the cause, the nature, even the possibility had been entirely unknown to me. At first I thought of the effects of cocain and adrenalin; then of traumatism, but the appearance of the same phenomenon on the sixth day in the second case, a particularly obedient and tractable patient, led me to reject both of these as possible causes.

A most painstaking examination of this case on the eighth day gave the clue to the cause, and further study of the first case revealed a similar condition. That prolonged contact of any foreign body with the posterior surface of the cornea will give rise to an opacity of that membrane, is well known, and the leaking wounds had evidently in these cases afforded chance to shreds of capsule to act in such a way. That the cause being promptly removed, the cornea may regain completely its transparency is indeed fortunate. It is to be noted that both these patients were ill-nourished, anemic, weak—old for their ages.

INHERITED AND ACQUIRED SYPHILIS IN THE SAME SUBJECT.

The rarity of instances of inherited and acquired syphilis in the same person is sufficient excuse for the publication of this case, especially as the evidences of each condition were in this particular instance so clear as to be unhesitatingly recognized by the least experienced.

R. M., a negro laborer, aged 23, applied at the clinic on January 21, 1905. He said that his eyes had been sore for two weeks, and that he could not see anything with his left eye. Vision R. E. = 20/1xx. L. E. = 0. The whole appearance of the facies was so characteristic that seen at a distance on the waiting benches a case of interstitial keratitis was instinctively taken for granted. The bridge of the nose was markedly sunken, even for one of his race; the upper jaws flat, the frontal eminences prominent, and the cranium, seen from the front, large and globular in comparison with the face. The head was cast down and the eyes protected by the visor of a cap, and a pair of ill-fitting smoked glasses. So, on

the patient taking the examination chair, the mouth was at once examined, and a set of teeth revealed almost the exact counterpart of those figured by Mr. Jonathan Hutchinson,¹ of which he says: "In any case in which the malformation was as marked as in this sketch, I should feel no hesitation in pronouncing the possessor of the teeth to be the subject of inherited syphilis, even in the absence of other testimony." Indeed, R. M.'s teeth were even, if it be possible, more characteristic. The upper incisors were wedge-shaped, the free edge narrower than the insertion, separated by a wide



space and inclined toward each other, and the center of each marked by a square cut notch with almost perpendicular sides. The other teeth were more or less peg-like.

Having removed the cap and glasses to examine the eyes, what was now my surprise to find, not the interstitial keratitis expected, but a well marked case of acute iritis on each side. There were multiple foci of gummatous infiltration of each iris, many small posterior synechiæ and classical, parenchymatous, punctate keratitis. This led to further examination and the forehead and forearms were found covered with a papular syphilide. A few of those

1. Reynold's System of Medicine, Hartshorne. Philadelphia. H. C. Lea, 1879, vol. i, p. 441.

on the forehead may be seen in the photograph, but unfortunately the arm, on which they were remarkably numerous, and distinct, was not held up alongside the face, and the cap and smoked glasses were not removed. All of my confrères of the staff and many of the post-graduate students of the polyclinic examined the man, and there was not the least difficulty or doubt expressed about recognizing the existence of both the inherited and acquired condition of disease.

TINE OF A STEEL FORK THRUST THROUGH THE LEFT
UPPER EYELID, EYEBALL AND THROUGH THE
ANTRUM OF HIGIMORE. THEREIN FOR
FOURTEEN YEARS. REMOVAL. NO
REACTION.

GEORGE F. KEIPER, A.M., M.D.

Eye and Ear Surgeon to St. Elizabeth Hospital, St. Joseph Orphan Asylum,
Children's Home, Indiana State Soldiers' Home, St. Anthony's Home for
the Aged, Pension Bureau, etc., etc.,

(Illustrated.)

On June 15, 1905, Dr. Frank B. Thompson of this city very kindly referred to me Alfred B., a colored laborer, because of a supposed foreign body in the left orbit. The patient gave the following history: Fourteen years ago he quarreled with a colored woman. She stabbed him with a steel fork in the left upper eye lid toward the temple. The eyesight was immediately destroyed, but he suspected no foreign body in the orbit or adjacent structures.

After the inflammation had subsided, no further trouble occurred until two years ago, when the old wound reopened. For a year he paid no attention to it. Then he came to see the writer about it. But the latter was absent in California. He did nothing further until he came to see me as above. Examination showed a bunch of exuberant granulations in and on the left upper eyelid. The eyeball is phthisical and adherent to the upper eyelid. The eyelid is contracted by the surrounding scar tissue.

Examination with a probe revealed a piece of metal just within the opening in the eyelid. Its direction seemed downward. The first attempt to remove it with stout forceps failed. The wound was cocaineized and enlarged with scissors. Another attempt was made and the piece was partially dislodged. With the next effort the piece was removed entire. Thereafter the wound was carefully probed with a sterile probe to determine the path which the tine

took when first embedded. Its direction was directly downward and extending through the antrum of Highmore and into its floors. The probe passed through the atrophied eyeball. No reaction followed the operation and the patient recovered promptly.

A photograph of the patient showing the condition of the left upper eyelid is submitted, as well as one showing the exact size of the foreign body, which is 56 mm. long. The writer regrets that he did not have the patient skiagraphed. It will be noticed upon

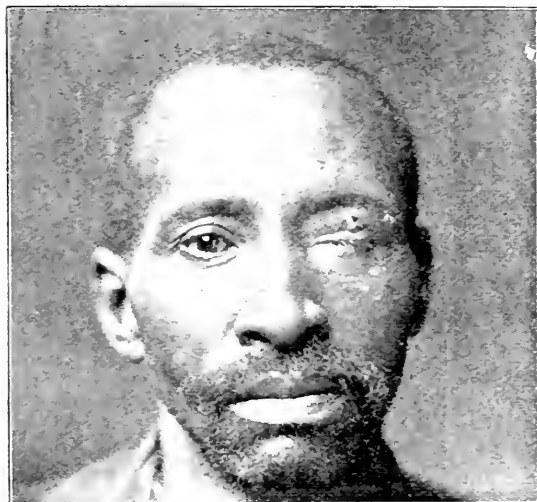


Fig. 1.

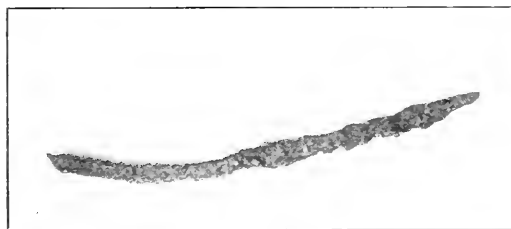


Fig. 2.

close inspection that the tine may be divided into three parts, according to the amount of deposit upon each part. The point has practically nothing upon it showing that it lay imbedded in low tissue, i. e., the floor of the antrum of Highmore. Above the point is a section which is much encrusted, showing that it lay within a cavity, i. e., the antrum itself. Then above this is a section showing a little deposit which no doubt indicates that it lay in soft tissue.

A CASE OF PSEUDO-PTERYGIUM AND SYMBLEPHARON, RELIEVED BY THE USE OF THIERSCH GRAFTS.

WILLIAM R. MURRAY, M.D.,

MINNEAPOLIS, MINN.

(Illustrated.)

Patient male, age 24, burned in right eye by molten metal while at work in machine shops. Injury was followed by a symblepharon

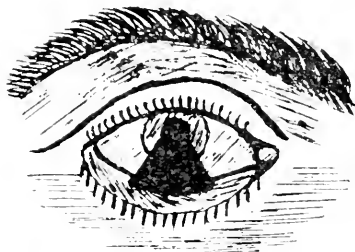


Fig. 1.—Lower lid drawn downward to expose cul-de-sac.



Fig. 2.

at the lower part of the lower lid, and by the formation of a large fleshy pseudo-pterygium, which extended from the bottom of the lower cul-de-sac to the center of the cornea, and was firmly attached to the episcleral tissue.

There was diplopia present, due to interference with the movements of the eyeball, and to the encroachment of the growth onto the pupillary area.

Six months after the injury the growth was removed by dissection and conjunctival flaps brought down from each side and sutured below the cornea. Ten months later the growth had recurred to its original location, as shown in Figure 1.

I advised operation and under cocain anesthesia dissected the apex of the growth from the cornea, removing with it the epithelial layer, and dissected the body of the pterygium from its attachment deep down to the bottom of the cul-de-sac and excised it.

The conjunctival and episcleral tissue was then thoroughly scraped, and a large and very thin Thiersch graft transferred from the arm, the lower border of the graft extending down to the bottom of the cul-de-sac and the upper border to the edge of the cornea. Fine silk sutures were then inserted to hold the graft firmly in place. Union of the graft to the underlying tissue readily occurred.

Figure 2 shows the condition of the eye at present, one year after the operation. There is no reattachment of the lower lid to the eyeball and the lower lid, when in its natural position, covers the graft, with the exception of a small portion on the nasal side of the cornea.

The graft still has a whitish appearance, and there is still some exfoliation of the epidermal cells from the graft, both of which are gradually disappearing.

I report the above case as showing the good results that may be obtained by the use of Thiersch grafts in a class of cases in which, in my experience, other methods of operating have usually been unsatisfactory.

The method of operating which I have followed in this case is one which was devised and advocated by Dr. F. C. Hotz of Chicago.

PRIMARY EPITHELIOMA OF CORNEA.

By GEORGE T. BRADY, M.D.,

SAN FRANCISCO, CAL.

(Illustrated.)

Without entering into polemics, so unsatisfactorily considered by previous writers on this subject (Kalt, La Grange, Parsons), I will simply state that contrary to all other cases, the neoplasm about to be described developed in an uninjured cornea without any evidence that it had ever involved the limbic area. The untouched, accompanying photograph and micro-photograph illustrate the position and composition of the growth.

J. C., Irish-American, teamster, single, 42 years old, was under the care of Dr. John R. McMurdo of the Mercy Polyclinic in 1900. At that time, the growth was only one-half its present size and further removed from the limbus than when he returned to the clinic on September, 1901. In 1893, he first noticed a pearly nodule

of pinhead size occupying the middle of the superior temporal quadrant of the right cornea. Medical advice was sought in 1900 because the growth, in addition to obscuring the vision, occasioned considerable pain at the beginning of every month.



Figure 1. Primary epithelioma. Splotch in upper half is due to light reflection from cornea.



Figure 2.

The patient is very muscular, and aside from his eye, has never been ill. His mother, father, two brothers and one sister succumbed to tuberculosis, he being the last living member of the family.

On the temporal half of the cornea of the right eye is seen a broad, irregularly, hour-glass shaped, grayish-white, rugose, sessile mass elevated $0.5=0.75$ mm. It is everywhere surrounded by clear cornea, excepting a small portion of its mesial aspect which shows an infiltration for 1 mm. Its nearest approach to limbus is 1 m.m. At its isthmus, it is 1 mm. broad and increases to 4 mm. in breadth at both poles. From the marginal plexus a few adventitious twigs penetrate the surface of its lower half. The conjunctiva is not inflamed. Other parts of the eye are normal. Under astropia vision of right eye is 20/50. Preauricular nodes not palpable.

A tentative diagnosis of papilloma was made and the lower half of growth excised with a cataract knife. After fixation in formalin, serial sections were made in various planes.

There was a close arrangement of typical epithelial cells with large, clear, vesicular nuclei. These were arranged in strands invading the underlying propria. The anterior limiting membrane had entirely disappeared where the epithelium dips deeply into the propria; a zone of marked lymphocytic infiltration is noted. Many of the sections exhibit typical pearl formation. Nowhere could a fibrous core be found occupying the center of the epithelial masses. Active mitosis is seen in many cells. No parasitic inclusions were found. Bacterial stains were negative.

A diagnosis of papillary epithelioma was made, but patient declined further operative interference.

Alfieri: Un caso di epithelioma primitivo della cornea Arch. di Ottal., 1897-8.
 Aubineau: Sur un cas D'epithelioma primitivo de la cornee. Rec. D'Oph., 1898.
 Dolgenkow: Canceroid de la cornee. West. Ophth., 1885.
 Galezowski: Tumeurs de la cornee. Traite des maladies des Yeux, 1875.
 Nuel: Neoplasms of the cornea. Norris & Oliver's System, vol. iv, 1900.
 Sgrosso: Contribuzione alla morfologia ed alla struttura del Tumori epibulbari. Annali di Ottalmol., 1892.

Snellen, Jr.: Un cas D'epithelioma de la cornee. Annal D'ocult, vol. cxliii, 1895.

COMPARATIVE ANATOMY OF THE EYE.

By JAMES LAW, F.R.C.V.S.

Director of the N. Y. S. Veterinary College.

VISION IN HIGHER ORDERS.

From a cursory glance one is tempted to say that vision and the organ of vision are characteristics of the higher order of living beings. There is no suggestion of such a function as sight in the vegetable kingdom and even in the lower order of animals. as in protozoa and vermes, the organ of vision appears to have been omitted. As we turn to the higher forms of life, in mollusks

and insects, we find in certain individuals the most elaborate visual apparatus, which is maintained through most of the higher forms.

HIGHER ORDERS DO NOT ALL SEE.

But it soon appears that vision is not the invariable mark of a higher grade of being; thus we find the blind fishes in the Mammoth Cave, and other beings condemned to live in obscurity, in which the useless organ has been obliterated.

EYE AN ADAPTATION TO NEEDS.

To a certain extent it is true that the eye is characteristic of the higher forms of life, yet even in these its development is subsidiary to the needs of the organism. The presence of light, on the one hand, and the needs of the organism on the other, appear to be the chief conditions which determine development or degradation and loss in this direction. The burrowing worms and deep sea fauna may be sightless, whereas mollusks that live in the broad light of day, as does the nautilus, are endowed with elaborate organs of vision. Insects may be blind in their larval forms, but are splendidly provided when matured, winged and fitted for their joyous life in the sunshine. It is interesting to note the observation of Silliman that the blind rat of the Mammoth Cave acquired a dim perception of objects after having lived for a month in a carefully graduated light in confinement outside. Here we have an apparently complete loss of function, without the suppression of the visual organ, and a restoration, in part, of the power of vision, under conditions which called for its exercise and rendered such function advantageous.

It may seem a hackneyed remark in these days of evolutionary doctrine that the excellency of the eye depends largely on development through physiological use, and the perpetuation of what we are pleased to call *accidental* variations, but it is a principle which should never be forgotten in all attempts to improve vision or to prevent deterioration in the sight of average humanity. Just as surely as the early maturity and great meat-producing qualities of improved farm animals had their origin in the rich pastures of England, seconded by generous artificial feeding and judicious shelter, so the structures and functions of the eye are improved by exercise and injured by disuse; the child early and constantly immured in school, and the workman or child in the factory or store, and still worse, the miner in the drift, becomes affected with myopia and other forms of weakness; while the Indian ranging the forest and constantly scanning the far distant hill and valley for his game becomes increasingly far- and clear-sighted. The skillful

adaptation of optical remedial measures is an unspeakable boon to humanity, but the radical remedy is not to be found in these alone. For the sake of the eyes of future generations, we must as far as possible educe the normal powers and possibilities of the eye, and thus lay the foundation for a better eyesight in the coming race. We have fallen upon what may be called the culmination of all the ages in the matter of knowledge and intellectual acquisition, but in developing and storing the brain we should see to it that we do not dwarf those structures and paralyze those functions without which intellect and skill must steadily fail of coming to a full fruition.

SIMPLEST VISUAL ORGAN A BRAIN EXTENSION.

Embryologists have taught us that the eye, like the other sense organs, is developed from the ectoderm or outer layer of the embryo, so that it belongs to the same class of organs with the nervous system.

The researches of Kupffer, Hatschek and Ayres on the embryo amphioxus, lamprey and sturgeon show that the eye of the vertebrate is a product of the cortical layer of the brain. The perpetuation of the retina as a ganglionic center, even in the adult mammal, fully sustains this view. Though the muscles of the eyeball and other appendicular structures are outgrowths of the mesoderm, yet the central and more essential parts of the organ of vision are developmental products of the nervous system. We may infer therefrom that the variations that we meet with in the eyes of different genera are largely in the nature of adaptations to the demands of the species of which it is a constituent part. In the amphioxus, to use the words of Ryder, "the tissues which envelope the brain and nervous axis, and the brain itself, are in life quite transparent, so that there is no necessity for the evolution of the series of transparent humors, of a refracting apparatus, or of a camera in the form of an eyeball with its automatic shutter or iris and muscular apparatus of accommodation and adjustment for direction as seen in higher types." Upon this simple adaptation of a projection of brain matter to the uses of a sense organ we have superadded in the different cases an optic stalk with a special sense organ on its summit and the various dependencies which become necessary to its preservation, proper activities and functions. Time would not allow us to go into these variations and functions at length, even if I were qualified to do so, but I can draw attention to some of the more prominent variations and especially those met with in animals with which I am more familiar and of which I can speak from actual knowledge.

EYE IN FISHES.

In fishes we find the most varied development of the visual organ, from the simplest eye-speck of the lancelet to the elaborate eyeball with musculature and nictitating membrane of the shark and other osseous fishes. In the lancelet there is a minute tegumentary follicle, coated with dark pigment, and lined by the expansion of what may be called the optic nerve. If we turn, however, to fishes like the eel or sturgeon, which grub in the silt of rivers and lakes, we find that the eyes are small and poorly developed, while in most osseous fishes, living in the illuminated watery medium, they are remarkable for their size and prominence relatively to the bulk of the body. I should here say a word of the compensations made to certain deep sea animals which pass their lives in whole or in part beyond the reach of sunlight. Sunlight that would be serviceable for the human eye disappears at a depth exceeding 400 meters, but some fishes, cephalopod mollusks and crustaceans, that live still lower down, have ingenious contrivances for condensing the last dim and lingering rays, or this failing, a power of generating phosphorescent light like that of the firefly or glowworm. By the aid of a parabolic reflector and lens the light is condensed on nearby objects, enabling the animal to discover and devour its prey in what appears to be impenetrable darkness. The great principle of correlation and development under use, and atrophy under disuse, is still maintained, only we have a provision for exercising function and use in an environment which would otherwise be incompatible with vision of any kind. It is a common experience and a warning against adopting absolute conclusions from insufficient data. How often do we see laboratory results proclaimed as the last word on a subject, when, with a change of conditions, a new law intervenes and the apparently impossible occurs, and is explained simply and satisfactorily in keeping with the new environment.

EYE IN REPTILES.

Among reptiles the Proteus of the Austrian caves suggests a retrogression from a higher development, having a distinct sclerotic, lined by pigment and a small spherical lens. This may be of some use in a dense obscurity in affording a dim, imperfect vision, but possibly it is only enough to warn the animal, when wandering into light, to retreat to the safe darkness of its native subterranean waters. When we come to amphibia like the frog, we are at once struck by the relative size and brilliancy of the eyes, and in the crocodile, though the eye is small, its muscular apparatus, as first

described by Hunter, is most elaborate and powerful. On the whole, there are more blind or amblyopic land reptiles than there are of those living in water, possibly because of the burrowing habits of many of the former. Again, in the osseous reptiles and fishes-alike, the sclerotic is often reinforced by calcified or osseous plates which serve to maintain the sub-circular form of the globe needful for their mode of life. Many of the reptiles are marked by the presence of a nictitating membrane and even a gland of Harder.

EYE IN BIRDS.

Coming to birds, we find the grand principle of correlation of visual power to the needs of life strongly emphasized. No family of birds is blind. The development of wing and eye is parallel. Soaring above the earth in the unobstructed atmosphere, with no solid nor liquid environment by which they can guide themselves and no means of hiding, eyesight is essential to protect them from enemies, and from contact with solid bodies in their rapid flights, and to discover the exact location of their prey in air, on earth or in water. A bird may be rendered blind by disease, but a class of birds generated blind would be speedily exterminated. All birds see, and in many the development of the eye is phenomenal in its ratio with the small brain or even with the size of the body.

The general form, too, of the eye is remarkably in keeping with the great importance of the organ in the avian economy. The anterior segment of the eye, representing especially the chamber of the aqueous humor, is extended forward in the form of a cone, or even of a tube, so as to remove the cornea and, to a lesser extent, the lens to a greater distance from the retina, and to allow of a far more extended range of accommodation, and a more speedy and perfect adaptation than in the globular or ovoid eye of the mammal. In night-prowling birds like the owl this allows of the greater convergence of the rays of light on the retina and the increased sharpness of vision for small and nearby objects in a comparatively obscure medium. In waterfowl, on the contrary, this extraordinary convexity of the cornea is least marked, as they see their often glistening prey through a denser medium.

Dissection of the bird's eye is misleading, as the projecting conical or tubular form of the cornea is then lost through the relaxing after death of the muscles which comprise the posterior chamber, and in convergence the organ becomes globular, as in man. In the vulture, soaring high above our vision, this flattening of the cornea allows him to locate his prey on the surface of the earth, while the gradual projection of cornea and lens, as he sweeps down upon it,

enables him to preserve the sense of its exact location and seize it with unerring certainty. Various other structures contribute to this remarkable power of accommodation. The front of the sclerotic contains 13 to 20 bony plates overlapping each other, but bound strongly together by the fibrous structure of the sclera. On the inner surface of these is a special circular muscle which compresses the region, projecting the cornea forward and adapting the vision to near and minute objects. But for such a provision the compression of the eyeball would tend to make it spherical, in place of projecting it as a cone or tube anteriorly.

In the same connection must be named the corrugated, vascular, erectile and pigmented plate, known as the marsupium, ruff or pecten, which extends forward from the line of the optic nerve through the vitreous to the lens or nearly so. This is in reality a development from the vessels homologous to the central artery of the retina, and by its erection presses on the lens through the vitreous or otherwise, carrying the lens forward and securing a prompt and extensive accommodation. Here a structure which seems to be seriously in the way of the light rays becomes, on the contrary, subservient to the clearest and most accurate vision. Flaccid and small when the cornea is flattened for distant vision, it becomes swollen and rigid and contributes strongly to the projection of both cornea and lens when the vision is to be concentrated on an object at once small and near, the image of which on the retina is minute, so that there remains an ample screen in the retina, without interference by the swelling pecten. In the high-soaring birds of prey the crystalline lens is remarkable for its flatness to enable the animal to see clearly at long distances, so that there is the greater need for the various special provisions for a speedy and extensive accommodation.

It should be noted further that the posterior part of the sclerotic is relatively thin, pliable and elastic so as to allow a lengthening of the eye in a posterior direction as well as an anterior one under compression.

The extraordinary mobility and dilatability of the iris and pupil in birds is worthy of note and, as it seems to be to a large extent under voluntary control, it becomes in no small degree adaptable to alternating distant, close and minute vision. The remarkable size and prominence of the eye of the bird and, except in rapacious birds, its position on the side of the head, is again suggestive of its aerial habits. The widest possible range of vision is allowed and, alike to evade its enemies and to secure its prey, it is furnished with the means of sweeping the entire environment.

An exception may be made in the case of some nocturnal birds, which have less to dread from enemies and in which accurate and near vision is an especial desideratum. The pupil of the owl, which closes at first as a vertical ellipsis and finally a perpendicular slit, shuts off the retina from the whole field on either side to secure accuracy of vision close at hand. As in the cat, in which the same conformation is seen, it seems to subserve the important purpose of still admitting a certain measure of illumination from the sky, though the lateral closure is concentrating the vision on the prey. Thus accuracy is secured without seriously increasing the obscurity.

Another peculiarity of the bird is the absence of the tapetum lucidum, the uniformly black background of the retina, absorbing the light rays, and allowing of the dilated pupil of the large and prominent eye, when on the wing in the full glare of sunshine.

IN MAMMALS.

In mammals, as in the lower creation, the eye is found to have adapted itself to its environment and the needs of the animal. In Italian moles the organ is extremely rudimentary and completely covered by skin and even hair, without any palpebral orifice. In the blind rat of the Mammoth Cave a further elaboration is shown, and a palpebral opening is present, but even when gradually inured to a twilight gloom, Silliman found that it arrived at nothing more than a slight appreciation of the distinction of light and darkness. Since the eye is not universal, as in birds, neither does it attain to the same grade of development and elaborate adaptation which in the bird enables it to picture the whole environment, and to make instant accommodation to near and distant objects. No mammal shows the exaggerated conoid or tubular prolongation of the eye anteriorly; none shows the calcified plates on the anterior part of the sclerotic. Each therefore presents in its eye a closer approximation to the spheroid, and when this is deviated from, as in the diminution of its antero-posterior diameter, the ovoid form is maintained by the greater thickness and rigidity of the posterior portion of the sclerotic. In the whale, in which the antero-posterior flattening of the eye reaches its climax, the sclerotic becomes so enormously thickened as it proceeds backward that the inner coats and media appear but as a moderate cavity in the anterior side of a solid fibrous body. This thickening of the sclerotic behind is well marked in our large domestic quadrupeds in which the eyeball is strongly flattened posteriorly as compared with the nearly spherical globe in man. In the whale the eye

is 2 1-3 inches in transverse diameter to 2 inches in the antero-posterior. In the ox the antero-posterior diameter is to the transverse as 43 is to 49; in the horse :24::25; in sheep :32::35, and in the dog :24::25.

In our domesticated animals the lateral projection of the globe bears some relation to the speed, being especially great in the running and trotting horse and in the semi-domesticated deer. In horse and ox alike it gives a field of view approximating to that of the bird and enables the animal to use his hind feet with unerring certainty upon his enemy. In solipeds and ruminants the anterior portion of the sclerotic is more or less pigmented, while in pig, dog and cat it is white to the margin of the iris after the manner of the human eye. In horse, ox and sheep the pupil is oval with its long diameter transverse. In the pig and dog it is round, as in the human eye. In the domestic cat, as in its companion night prowler, the owl, the fully dilated pupil is round, but it narrows from the sides and when closed shows a long vertical slit. As already remarked, this seems advantageous in concentrating the vision in the gloom, without losing such illumination of the posterior chamber as falls from near the zenith.

The color of the iris varies greatly in different mammals, from the light yellow of the cat to the dark brown or black of the soliped. Whatever the shade in the healthy eye, it is characterized by a smoothness and uniform brilliancy which is greatly marred by the dark dinginess which is left after severe inflammation. In the larger quadrupeds a remarkable feature is the row of black, rounded projections (*corpora nigra*) attached to the free border of the upper half of the iris. The prominent eyes, standing out so far from the orbit, and denied the protection of eyebrows against the blazing glow of sunshine, have this compensation, which shelters the deeper chamber without limiting the field of strategic vision.

A notable feature of the choroid in quadruped mammalia is the *tapetum lucidum*, the counterpart of the *macula lutea* in the human eye, and which is absent from the eye of the bird. This is a brilliant colored area occupying the depth of the posterior chamber and extending upward and outward from the optic papilla, which in its turn occupies a position slightly below and to the inner side of the axis of vision. The choroid covering the floor of the chamber beneath the level of the optic papilla is of a dense black, fitted to absorb the vivid rays that fall from above. The *tapetum* begins at a horizontal line about 2 mm. above the papilla and shades off into a brighter and brighter hue toward the center

of the lustrous field. It would seem specially adapted to receive and image the rays which come from the level of the eye and beneath it. In the horse it reflects a brilliant azure blue in the center, shading off to a brownish or greenish blue toward the periphery. In the ox the center of the tapis is a rich golden green, which shades off to a bluish tinge toward the margin. In the sheep it is still golden green but somewhat paler. In the pig it has a shining brownish yellow or chocolate color. In the dog it is almost white in the center, shading off into a brilliant sky blue toward the outer border. Finally, in the cat it is of a rich golden yellow, suggesting the smaller macula lutea of man. The tapetum can not fail to give a clearer visual definition in comparative obscurity, as well as a much wider field of such clear image than is the case in man. It is noticeable that it figures the objects below the level of the eye, where the herbivora and carnivora look for their food, and that level where danger is most to be dreaded. With dilated pupil it produces a remarkably brilliant reflection from the eye, and in amblyopia and rabies causes those flashes which are such striking features of these cases.

The brilliant tapetum of the quadruped must improve the vision in semi-darkness, and serves to explain the crepuscular habits of the cat and other animals, as well as the notorious fact that the horse and dog will at night see and guard against enemies and dangers which, with all his superior intelligence, man fails to detect.

If we now glance for a moment at some of the accessories of the eyeball, derived from the mesoderm in the embryo, we will find certain peculiarities of the lower animals that are full of interest to the ophthalmologist.

RETRACTOR OCULI.

In the case of the muscles the domesticated quadrupeds show the counterparts of all the muscles of the human eye—the four recti, the superior and inferior obliques. In addition they present what has been called the *retractor oculi*, which is simply a repetition of the four recti grouped more closely around the optic nerve and attached to the posterior in place of the anterior part of the sclera. Like the recti proper, they have their fixed attachment to the outer side of the optic foramen, and in common with the external rectus receive motor innervation from the sixth cranial nerve. This muscle acts with great energy, in common with the abductor, in retracting the eye and rolling it outward, and renders it very difficult to fix the organ for operation without general anesthesia.

It greatly assists in the sudden instinctive motions of the eyeball and of the nictitans when a foreign body falls upon the cornea.

MEMBRANE NICTITANS.

A special feature of the eyes of birds and mammalian quadrupeds is the nictitating membrane or cartilage. This is wanting in man and ape, but assumes a great development and importance in the four-footed mammals and above all in birds, in which it constitutes a third eyelid, passing easily and quickly over the entire globe. When at rest, this is lodged at the inner angle of the eye, with but a little of its thin, even margin showing beneath the caruncle. The basis of the apparatus is an elastic fibrocartilage prolonged at its inner end as a thick prismatic stem, and expanded anteriorly into a broad, thin expansion with a perfectly smooth, even border, fitting accurately on the rounded surface of the eyeball and covered by the mucosa. Its thick, deep extremity is continuous with an abundant cushion of adipose tissue, which fills the depth of the orbit and extends between the muscles. When the eye is retracted this adipose tissue gives way and, crowding forward, pushes the anterior delicate border of the nictitans over the globe of the eye, so as at times to completely cover it. In the bird this third eyelid by a quick movement comparable to winking, covers the whole front of the eye at frequent intervals.

GLAND OF HARDER.

As a dependency of the nictitans is the gland of Harder, a tear gland, situated under the cartilage and compressed and emptied when it is crowded forward, so as to assist in the removal of foreign bodies by the flow of liquid, at the same instant as they are pushed along by the scoop-like border of the cartilage.

The Harderian gland is well developed in birds, ruminants, large and small, pigs, carnivora and rabbits. It has not been found in the soliped, in which the flow of tears from the single lachrymal gland is alone available for washing off foreign bodies.

Valuable as the nictitating apparatus is in removing dirt and other foreign bodies from the eye, its presence is often a cause of apprehension by those about the animal. Whenever from any cause the eyeball is retracted—in conjunctivitis, iritis, cyclitis, choroiditis, in retinitis, rheumatism or neuralgia—the nictitans is kept habitually protruded over the cornea so that people think that a membrane has formed over the organ and must be removed. Again, in brain or other nervous disease, when the eye is drawn back, this protrusion appears. It is one of the earliest and most persistent symptoms in most cases of tetanus in animals, and is

not an uncommon occurrence in rabies. In past times it has been no uncommon thing to see the useful organ ruthlessly cut out under the mistaken impression that it was abnormal and injurious, with the result, if the animal survived, of a permanent weakness of the eye and a greatly increased predisposition to the injury of the conjunctiva by the lodgment of foreign bodies. There are times when the nictitans, like other tissues, will become the seat of inflammation or of neoplasm, and active treatment will be required, but any such treatment should be in the hands of an expert who will not mistake a useful normal structure for an abnormal growth.

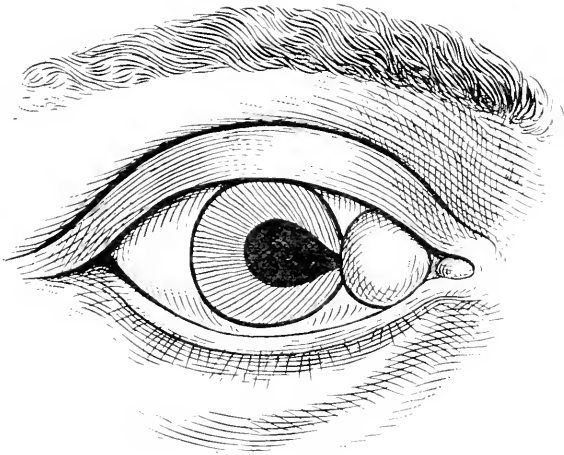
INDIRECT INJURY OF THE EYEBALL.

By DR. EBERHARDT.

MICHIGAN CITY, IND.

(Illustrated.)

Mr. L., about 55 years of age, consulted me the 21st of April, 1905, giving the following history: The day before he had been struck over the head with a stick. He had received just one blow,



which, though heavy enough to break the stick, did not stun him nor did it fell him down. He walked home and soon noticed that he could not see with his right eye.

Examination revealed crusts of blood over the right parietal region. The right eye presented a considerable degree of chemosis, especially pronounced at the nasal side. The cornea was clear, the anterior chamber full of blood, so that the iris was invisible. Vision was reduced to light perception.

I did not see the patient again until the 9th of May, when the eye presented the following aspect: The edema of the conjunctiva bulbi had disappeared, except at the nasal side, where it apparently persisted, in the form of a smooth, round lump. The anterior chamber was deep and now perfectly free of blood. There was a coloboma of the iris towards the nose. No view of the fundus could be obtained, the pupil being obstructed by a dark mass, probably blood. Vision the same as first noticed. Subjectively, there was very little discomfort. What was spoken of as chemosis or edema on the nasal side of the globe proved, however, on being touched, to be solid, and this, taken together with the fact that it had the exact size and shape of the crystalline lens, compelled me to change the diagnosis. It was without doubt a case of dislocation of the lens under the conjunctiva bulbi. This view was further confirmed by the depth of the anterior chamber and the absence of the lens reflex.

Dislocation of the lens under the conjunctiva is nothing very unusual; but what makes this case worth reporting is the etiology. Dislocations of this kind are almost invariably brought about by a direct traumatism of the eyeball. Under close and repeated questioning the patient denied having received any direct injury to this eye.

The mechanism was evidently the following: The traumatism first caused a sudden intra-ocular hemorrhage, which forced the lens out under the conjunctiva, tearing at the same time the iris. But how the hemorrhage was produced remains to be explained: there were no symptoms of fracture of the base.

The injury causing no pain, the patient scorned the idea of having the lens removed, and was seen no more.

MESENCEPHALIC PARADOXES.

By BURT G. WILDER, M.D.

Professor of Neurology, Vertebrate Zoology and Physiology, Cornell University.

NOTE.—The following propositions as to unexpected features of the mid-brain from the standpoints of structure, comparative anatomy and development constituted the basis of an address before the Buffalo Ophthalmological Society at its meeting in Ithaca, May 3, 1905.

1. TROCHLEAR (FOURTH) NERVE; ITS MORPHIC SIGNIFICANCE. —For the demarcation of two brain segments, both primary and definitive, we should expect a nerve to be large and important, and to arise apparently as well as really from the ventral aspect like all the rest. Yet, excepting perhaps the lancelet and hags, the segments represented by mid-brain and cerebellum are demarcated

by the smallest cranial nerve: it supplies a single muscle of the eye (probably not of extreme consequence) and emerges from the roof of the cavity; note the clay model showing its decussation in the valvula.

2. RELATIVE SIZE OF THE MID-BRAIN AND THE CEREBELLUM IN THE HUMAN EMBRYO AND ADULT.—As in vertebrates generally, in the human embryo the mid-brain is early formed and most conspicuous; the cerebral hemispheres are formed later and for a time are insignificant; yet the latter eventually outgrow all other parts and the mid-brain is practically hidden so as to be exposed only by divarication or dissection. Paraphrase.—The greatest shall be least, and the last (in time) shall be first (in place) and greatest.

3. RELATIVE SIZE OF CAVITY AND THICKNESS OF WALLS.—Excepting the lancelet and probably the hags, in all embryos the walls are relatively thin and the cavity (mesoceles) relatively large; Tiedemann characterized it as a "vast and spacious cavity." In mammals only the walls are enormously thickened in the adult, and the cavity is little if at all enlarged; see the clay model. With the sturgeons (e. g., *Polydon*) there is an intrusion from the cerebellum, and in Teleosts the intruded parts are very extensive and complicated, and nearly fill the mesocoele; see Mr. Sheldon's transection of the carp's brain. Next Practicum.

(a) The conditions in Teleosts constitute a practical bar to the application of the general rule. "*Amesencephalo tutissimus incipies*;" yet if the intruded cerebellum is removed, the mid-brain itself is really simple.

4. RELATIVE SIZE OF THE MID-BRAIN IN GROUPS OF DIFFERENT GRADES.—In embryos generally the mid-brain is the largest and most conspicuous. One or both of these characters would naturally be looked for in lower or more generalized groups. Yet among the water-breathers it is largest in Teleosts ("bony fishes"), the most specialized group; while among the air-breathers it is most conspicuous in the birds, certainly the most specialized vertebrates, and the "highest" from some standpoints. Note the lateral position of the geminal lobes in birds, a condition unknown among other groups.

5. RETENTION OF THE CRANIAL FLEXURE. CORRESPONDING WITH THE MID-BRAIN.—That flexure is more or less decided in all (?) embryos at a certain stage: see, e. g., shark and man. It would naturally be expected to persist in lower forms and disappear in higher. Yet, taking only the air-breathers, it is most completely obliterated in the lowest, the Amphibia (frogs and salamanders), and most perfectly retained in man: see wall maps of man

and chimpanzee at east side of room: there may be purely mechanical reasons for this condition, especially as connected with the erect human attitude.

6. THE MID-BRAIN AS CONSTITUTING THE "END" OF THE HEAD.—In nearly all (excepting lancelet and hags?) embryos, at a certain stage, the mid-brain is not only the largest and most conspicuous brain region, but (by reason of cranial flexure) actually constitutes the "end" of the head. The condition might reasonably be expected to persist in some adult form; yet, so far as I know, no such form exists. May we speculate that such have existed in geologic times and vanished without traces? The following was not presented at the meeting.

7. THE PRESENCE, IN THE ADULT, OF A TRANSVERSE SUBDIVISION OF THE MID-BRAIN IN MAMMALS ONLY, NOTWITHSTANDING ITS PRESUMED CONSTANCY IN THE EMBRYOS OF IMMAMMALIA ALSO.—According to Chas. Hill (thesis, 1899; Zool. Jahrb., Abtheil. für Anat., etc., xiii, 1900, pp. 56, 3 pl., 4 figs. in text; Abstr. in Anat. Anz., xvi, 1899, 353-369, 22 figs.), in the teleost and chick embryos examined there are eleven primary neural segments or neuromeres. The sixth becomes the cerebellum; the last five coalesce more or less completely as the oblongata. The first three become the forebrain (thalamic, cerebral and olfactory regions). The fourth and fifth become the mesencephal. In adults, however, unless we recognize the dubious constriction called "Isthmus rhombencephali" in the B. N. A. (see melon sheet with Stroud's two figures of embryo and brain, No. 2,652) the mesencephal of immammalia is a single pair of lobes, bigeminum; only in mammals is it a quadrigeminum; nor has it yet been determined that the pregeminum and postgeminum, respectively, represent the fourth and fifth neuromeres. See also my paper, "Do the cerebellum, etc.?" A. A. A. S., Proc., 1884, 523-525.

Reports of Societies.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting held April 11, 1905.

The president, Dr. J. Elliott Colburn, in the chair.

BILATERAL KERATOCONUS.

Dr. Thomas Faith exhibited the patient, a boy, aged 15, who had been in good health until he had an attack of diphtheria in October, 1903. He had trouble with his eyes until the following summer, but could not read as well as before. He had lenses fitted, but they gave no satisfaction. He had a minus cylinder 25 in one eye, and a minus sphere in the other; right vision, 6/50; left vision, 6/22, with typical keratoconus in both eyes, more marked in the right than in the left. Pure sulphate of alum applications were made, under cocain, for a week, when the vision in the right eye was 6/30, and in the left eye, 6/15 —. March 8, right vision was 6/15 —; left eye, 6/15 +. Applications were made every second day. March 20, right vision, 6/15; left vision, 6/12. Owing to a little irritation of the left cornea, atropin was used, and the beginning ulceration quieted down under hot applications and atropin. Treatment was resumed in a week. To-day vision in right eye is 6/15 + 3; in left eye, 6/9 — 3.

In a second case shown there was marked keratoconus in one eye, and less in the other. The same applications were made two or three times weekly as in the previous case, and, in addition, the patient received iron and arsenic for her chlorosis. Vision in the left eye was 20/160; in the right eye, 20/120. The applications improved the vision, until it was 28/80 in the left eye, and 20/60 in the right, the eye with the most marked keratoconus.

After being under treatment from October until March, the vision remained about the same, and then suddenly went back to 20/120. The treatment has been continued, but the vision has remained 20/120 in one eye, and 20/80 in the other.

TUMOR OF CORNEA.

Dr. Oscar Dodd presented a man with a growth on the right cornea. About four years ago he had trachoma; vision was not

markedly affected. Two years ago he was struck on the right eye, following which he had severe pain and inflammation. About one year later the growth appeared at the site of the injury, near the inner canthus, and gradually spread over the cornea, until now it is covered completely. He still has perception of light. The growth is lobulated and quite soft. Enucleation has been advised, and the patient has consented to having it done.

ALBUMINURIC RETINITIS.

Dr. H. V. Würdemann's patient had an attack of sudden blindness, and applied for treatment March 5, with uveitis. Vision was, fingers 1/3 meter. There was some pain and ciliary injection. Candle fields are large. A field taken with 21½ cm. square could be seen. He was vaccinated four weeks before and had considerable eruption, and a very sore arm. He also has a slight mitral regurgitation. He was given calomel, and dionin was instilled into the eye, producing some reaction. Mercurial inunctions have been kept up for the past ten days. Thirty-six hours ago the fundus cleared sufficiently to permit of an examination. The choroidal reflex was present and a considerable retinitis of the albuminuric type.

Examination of the urine showed no albumin, specific gravity 1008; color very pale; no sugar. Yesterday the specific gravity was 1022; reaction acid; very slight trace of albumen. To-day the color is dark amber; specific gravity 1026; reaction acid; no sugar; very slight trace of albumen with Heller's test.

The diagnosis, he said, rested between nephritis, brain tumor and autointoxication. The case has not been studied sufficiently to permit of a positive diagnosis. The improvement under mercurial inunctions, from fingers at 1/3 meter to 6/36 is remarkable.

PROLAPSE OF CHOROID.

Dr. Henry Gradle reported the case of a man who was thrown out of a buggy. The eye was somewhat bruised and blood-shot; vision was normal. Two months afterward, he had a prolapse of the choroid back of the ciliary region. There had been a rent in the sclera, and there were distinct black tumors, three or four millimeters in size, fairly rounded, surrounded by a mild trace of injection. There was no fundus lesion, and the eye was otherwise normal. After using adrenalin for three or four days, the prolapsed choroid receded completely, and a week later, nothing but a slight superficial thickening of the conjunctival tissue was noticeable. The eye is now normal.

The adrenalin caused a slight irritation of the cornea. The tension of the eye was normal.

DOUBLE DISLOCATION OF LENS AND RUPTURE OF CHOROID.

Dr. Phillips presented this case. The rupture of the choroid is crescentic in shape. The right eye was injured about three years ago; the left about two years ago. The dislocation of the lens is upward and slightly inward in both eyes. The rupture of the choroid is below the disc. Vision in the right eye has improved from about 10/200 by a minus 1, with minus 4, to 20/60; left eye, plus 1, with minus 1.50, with mixed astigmatism, bringing him 20/30. It is impossible to say at this time whether the conditions present are the result of the injury.

DISCUSSION.

Dr. Clark Hawley said that Dr. Würdemann's case was interesting from the standpoint of intestinal disturbance. He has had three such cases. In the first no diagnosis was made. All three cases were blind in one eye; one had typical albuminuric retinitis with opacities, and vision reduced to less than 6/36. He went to an osteopath, was cured of the chronic constipation, and the eye got better. The other two cases got well under general treatment. There was no evidence of kidney trouble in any of the cases.

Dr. H. B. Young removed an eye several years ago that had all the clinical appearances of Dr. Dodd's case. It was a spindle-cell sarcoma of the limbus.

Dr. J. Elliott Colburn suggested that Dr. Dodd's case is evidently one of epithelioma. He advised treating the case with the x-ray. Judging from the history the tumor is external to the globe, and inasmuch as epithelioma yields readily to the x-ray, he would not hesitate trying it in this case.

Dr. A. H. Andrews said that unless casts have been demonstrated in the urine, a slight albuminuric retinitis does not necessarily doom the patient.

Dr. H. B. Young referred to a case over 60 years old, in which he made an unfavorable prognosis. Six years afterward the patient returned with the same thing in the other eye. He lived for a few years. His daughter died recently of parenchymatous nephritis.

Dr. W. F. Colman recently saw a case in which he made a prognosis of early death six years ago, when there was every evidence of albuminuric retinitis. The man still has albuminuria, and the diagnosis has been confirmed repeatedly.

Dr. William H. Wilder referred to a similar case where a prominent diagnostician discovered albumin and casts in the urine, with

a typical albuminuric retinitis in one eye; the other eye was normal. The patient is living to-day after four years, and the sight of the eye has recovered in great measure; vision is about 20/60.

In another case there was typical albuminuric retinitis recognized about one year before death, in which there was recovery of vision to about 20/40.

Dr. N. M. Black suggested that the severe reaction from the vaccination might have something to do with the man's condition.

OBSERVATIONS ON ACUTE NON-TRAUMATIC UVEITIS, FROM A SERIES OF SIX CASES.

By Dr. H. B. Young.

DISCUSSION.

Dr. E. V. L. Brown, discussing the pathology of uveitis, said that these cases do not come under any special classification so far as their pathology is concerned. Only seven cases of serous uveitis have been studied; all of these had a precipitate on Descemet's membrane. The classification into serous, plastic and suppurative is too fixed. Just where to put such cases as Dr. Young cited demonstrates the fallacy of the classification of the disease. The uveitis, in all likelihood, was of the endogenous form. So far as sympathetic ophthalmia is concerned, the pathologic findings in endogenous and exogenous cases seem to be the same. In some 80 cases studied the findings were uniform in the traumatic and non-traumatic, and the penetrating and non-penetrating cases. The uveitis was of the fibrino-plastic type. The deposits of a tuberculous nature belong to the dyscrasias, and are of the endogenous type.

There have been many theories brought forward as to the cause of the transmission from one eye to the other. Perhaps Deutschmann's theory has been given up by all. The theories of metastasis, Dr. Brown Pusey's theory of cellular toxin transmission have come to the front. Ehrlich's immunity theory disproves the nerve irritation theory by showing that an induced uveitis in the one eye does not cause any perceptible change in the blood status of the uveal tract on the other side. This was demonstrated by immunizing animals and finding that the aqueous of the fellow eye showed none of the products of immunization, but the second withdrawn aqueous showed changes taking place in the general circulation, those of hemolysis.

Dr. Brown Pusey referred to some experiments by Dr. Stoltz of Freiburg, who injected tubercle bacilli and produced a disseminated uveitis, which got well promptly, without sweatings or the

use of salicylates. The probability is that tuberculosis is a very frequent cause of uveitis, as Dr. Young mentioned in connection with his case.

Dr. Young, in closing, said that two features struck him very forcibly in all his cases: The pain was paroxysmal, and the pupil had a constant tendency to contract, and yet did not form true synechiæ, not even in the bad cases. However, if the atropin was omitted or improperly instilled, so as not to cause complete dilatation, fine lines of attachment showed on the following day. After reapplying the atropin energetically for a few hours, these would disappear.

The case which had the exudate suffered the most terrific pain, worse than that of glaucoma, which only opiates would relieve. The eyes were tender to pressure, but not excessively so, and there was never any increase in tension.

MEETING OF BRITISH MEDICAL ASSOCIATION. LEICESTER.

Wednesday, July 26, 1905.

Dr. G. A. Berry, president, in the chair.

The president in opening the work of the section reviewed in brief the recent progress of ophthalmology, after which the following papers were read:

Dr. A. Bronner, Bradford, read notes on a case of emmetropia in which distressing local and general symptoms had been relieved by the use of — 1 D. spherical with — 1 D. cylindrical glasses.

He referred to the many cases that everyone is familiar with in which the correction of small errors of refraction had relieved local and general symptoms and to the still more marvelous cases that were frequently seen reported in the lay press. In America, heterophoria is the cause of many of these wonderful symptoms, and in England, slight errors of refraction are said to produce them. The case here recorded is one which shows how careful we should be in believing the statements of patients and how the use of glasses which are absolutely wrong can produce the same results. The patient was a man aged 24, who came to Dr. Bronner, stating that the glasses he was wearing were simply wonderful and he required no alteration in them, but he wished to know whether, if he left them off, it would cause injury to his health, as they interfered with his promotion in business. Before he wore glasses, six years ago, he had been in indifferent health and was unfit for

work. He also suffered much from headache. He had always seen fairly well at a distance, but had to bend his head much in reading. As soon as he began to wear glasses all his distressing symptoms disappeared and he gained several stones in weight. On examination he read 6 18 and J_i with difficulty with his glasses, 6 12 and J_i easily, without them, and with — 0.5. The discs were congested and both eyes practically emmetropic. He was wearing sph. — 1 D. and cyl. — 1 D. In this case the cure was obviously due to suggestion only, and possibly was assisted by the fact that with the glasses he was obliged to hold his head up when reading.

This case shows how careful we should be to examine all eyes thoroughly, for it is certain that such a case as this one could quite well have been cured by atropin and by holding up the head when reading.

Mr. E. E. Henderson read a paper on the effect of atropin and eserin on the filtration of fluid through the eye. The apparatus employed was slightly modified from that previously used, a description of which was published in the *Journal of Physiology* in a paper by him and Professor Starling. The fluid used was normal salt or Ringer's solution, which had previously been filtered through a Berkefeld candle. On raising the pressure in the living eye, a certain rate of filtration was observed and recorded by the scale attached to the tube. This rate increased with the pressure and was due partly to increased filtration and partly due to diminished production of the normal intraocular fluid. This rate depended on numerous factors, some of which had been noticed by other observers. There was one factor of which they had previously met with no account and that was the rate of filtration of fluid when the eye was under the influence of atropin or eserin. The rate of filtration at artificially raised pressures was found to be considerably larger in the eye under eserin than when under atropin. That this effect was not purely mechanical was proved by the free filtration that was observed after death. Possibly at these high pressures other channels were opened in the eye when the pupil had been fully contracted with eserin, as, for instance, the surface of the iris.

The following are figures taken from a typical experiment: Cat anesthetized with ether. Blood pressure—average 138 mm. and varied very slightly throughout the experiment.

Intraocular pressure.	Rate of filtration in eserine eye in cubic mm. per minute.	Rate of filtration in atropin eye.	Rate of filtration in atropin eye immediately after death.
26	0	0	15
46	11	8	20
66	16	11	25
86	23	14	31

It will be noticed that the intraocular pressure is the same in both eyes, namely, no filtration took place in either eye at 26 c.c. pressure.

Mr. Bishop Harman read notes on the result of electric treatment of trachoma as practiced at the Middlesex Hospital. Some cases had been treated with *x*-rays, others with high frequency currents, and others with radium. The results in all were most unsatisfactory and none of them did anything like so well as when treated with the more usual applications, such as copper or silver.

Mr. Devereux Marshall agreed with what Mr. Harman had said, and he stated that his own experience of *x*-rays and radium had not been by any means encouraging, and he much preferred applications of copper or silver.

Colonel Drake-Brockman said that he was pleased to hear the views expressed by the reader of the paper and Mr. Devereux Marshall. He had watched with interest all that had been published on the subject, and was not satisfied with the results that had been given. He had himself always relied on therapeutic application for the relief of trachoma. He had more recently used argyrol and cuprol with massage, a plan of treatment which was painless and excited no terror in the minds of patients. He had now abandoned the more powerful and caustic remedies which were formerly so much used. The president and Dr. Bronner also took part in the discussion.

Mr. Bishop Harman described a case of false hay fever. It occurred in a lady who never had a sign of hay fever until she went to reside in a district surrounded with pine trees. She then suffered severely. The usual remedies did little or no good. Mr. Harman then examined her eyes and found some astigmatism, which he corrected. Since that time the symptoms completely disappeared. He ascribed this to the fact of unequal refraction setting up an irritation on the retina which by a reflex action stimulated the fifth nerve.

Mr. Devereux Marshall asked how, if Mr. Harman's theory was correct, he could account for the fact that such patients suffered only in the spring, when the light was as strong or stronger later on in the summer, and nearly always was so at sea, when such patients never suffered in this way.

Mr. Harman, in reply, said that the retina got more accustomed to the light than it was when the eyes had been used to the dull light of winter.

Dr. Karl Grossmann, Liverpool, gave a lantern demonstration of lepra ophthalmica. He showed a large number of colored photo-

graphs which he had taken in Iceland of patients suffering from leprosy, which showed in a remarkable manner the lesions caused by the disease.

Dr. Karl Grossmann recorded a case of congenital absence of the dilator of the pupil. The patient was a girl, aged 5 $\frac{1}{2}$ years, quite healthy in every respect and well developed mentally and physically. The right pupil was eccentric and almost slit-like, its position being upwards and inwards. The iris was tremulous and careful examination showed that the lens was absent. After atropin the pupil became a mere shade wider than before, and a small, moving mass was visible behind the lower margin of the pupil. This was evidently a rudimentary lens, there was no trace of capsule seen in the pupil. The fundus appeared to be normal, and after eserine the pupil contracted to a narrow slit. The left eye showed the same condition with the exception that the lens was not visible at all. The effect of eserine showed that the sphincter was present, but the very slight effect of atropin was due to the paralyzing effect upon the sphincter. There were no posterior synechiæ present. Dr. Grossmann knew of no similar case on record.

Dr. Grossmann also read a paper on the treatment of conical cornea by the hot air cautery. He pointed out that any form of red hot substance had the disadvantage of causing necrosis of any tissue it touched, and in addition it was difficult to accurately regulate the temperature. This could be more satisfactorily obtained by superheated air as employed in an instrument devised by Dr. Hollander of Berlin. It consisted of a Paquelin cautery in which was a platinum coil, the air in the cell was heated by the Paquelin and the rubber tubing was so arranged that the same set of bellows which supplied the cautery sent an ordinary fresh in-current through the heated metal coil. He had used this cautery for various eye and lid diseases and particularly for conical cornea. In operating for this the stream of hot air was allowed to fall upon the apex of the cone. In order to keep the instrument absolutely steady a transparent shield of mica was used, through which the point of the cautery could project. Care should be taken not to do too much, for the hot air dries up the epithelium all round, but this rapidly regains its normal transparency. He had used it on five cases with satisfactory results.

A demonstration of the instrument followed.

Dr. Cecil Shaw, Belfast, read notes on a case of toxic amblyopia. The patient, a man aged 20, was first seen by him Feb. 10, 1905, on account of sudden failure of vision. He was a carpenter, and a fine, healthy-looking man, with nothing of note in his family or

personal history. Five days before, he had an attack of influenza. On the seventh he rode out on a bicycle, but was sent home, as he did not look well. His sight was becoming dim and when first seen on the 10th, he could only count fingers with the right eye, and could see nothing with the left. The pupils were widely dilated and the fundus appeared normal in both. He stated that for a day or two he had lost all sense of taste, but that had returned. On February 17 he could not even count fingers, there was numbness of the right leg, arm and side. Paresis of the left internal rectus then appeared and a divergent squint developed, the lids remained half closed. On February 21, his gait was staggering. For some weeks his vision remained the same, but his general symptoms became more marked and he was sick every time he tried to rise.

On March 22 his vision had decidedly improved, and he could count fingers with both eyes, the sickness had disappeared and his strength was returning. His memory was very defective and he could remember nothing of the first few weeks of his illness.

On May 5 he could walk fairly well and the vision was steadily improving. On June 8 he saw Dr. Shaw again, he was quite well and strong except for his sight, which had, however, improved to R. V. 1/24 and L. V. 1/9. The fundus remained quite normal.

The discussion on Intraocular Tuberculosis was opened by Mr. W. H. H. Jessop, who limited himself to dealing with the disease as it affected the choroid, iris, ciliary body and retina, and as the chief seat of lesion was the choroid he dealt at length with the two principal forms in which it was met, viz., miliary tubercle and solitary choroidal tubercle; of the latter an analytical table of twenty cases collected from various authors was given.

Solitary tubercle was, he said, generally found as a rounded spherical body of a gray, white or yellow color, starting beneath the retina from near the optic disc, but it seldom tended to infiltrate the retina. The surface was nodular and the whole mass sometimes flecked round with spots like diabetic retinitis, but not pigmented. Yellowish caseating spots were sometimes seen on the surface. Hemorrhages might occur, but they were not often recorded.

In miliary tubercle of the choroid, tubercular meningitis was nearly always present; out of 15 cases at St. Bartholomew's Hospital 14 had it, while the other had general tuberculosis.

Tubercle of the iris and ciliary body were next treated and also that rare condition, tubercle of the retina.

As to diagnosis, the best test was inoculation experiments in many cases, especially if caseation had taken place, the bacilli were

not to be found, the other signs, such as giant cells, etc., were of very minor importance.

He had never seen a case of primary intraocular tuberculosis, and he doubted much if such ever occurred. In acute miliary tuberculosis, choroiditis was found in about 50 per cent. of the post-mortem cases and about 30 to 35 per cent. of patients examined ophthalmoscopically during life. He had not had much experience with tuberculin, but he felt sure that the old tuberculin was not trustworthy and it often did much harm. The excellent results of Von Hippel when using tuberculin T. R. led him to think it should be tried in every doubtful case for diagnostic purposes, and on all the cases as a means of treatment. The largest dose to begin with should not exceed 1/500 m.g., which could be increased gradually to 1 m.g.

He much deprecated excision of tubercular eyes unless there were great pain and the general health were much affected thereby. As the condition was not primary the disease could not by this means be removed and there was real danger of setting up meningitis, as shown by the fact that out of 11 cases that were excised 8 died within two months from this disease, which was a great contrast to Schieck's 13 cases treated with tuberculin in which they all recovered and not a single eye was lost.

In miliary tubercle of the choroid he had never seen vitreous opacities, neither were they present in his two cases of chronic choroidal tubercle, which were cured after the latter condition was cured. The most remarkable thing was the small apparent change in the part of the fundus where the tubercle existed and also the absence of pathological pigmentation even in the neighborhood of the greatest lesion.

In the cases of pulmonary phthisis at St. Bartholomew's Hospital he found no note of choroidal changes, but Carpenter and Stephenson found 11 cases out of 119 in children, or 9.24 per cent.

In his two cases in which tubercle was demonstrated, or inoculation experiments succeeded, and thus made the diagnosis sure, he found after the lapse of four and five years that the changes were not visible in the macular region, but started near the disc, as did also most of the 20 cases detailed. The absence of much scarring, and the total absence of pigmentation seemed to distinguish the cases from those of the syphilitic type.

Professor Hess said he had made tuberculin injections in 26 cases; in 18 he used the old tuberculin, and in 8 the tuberculin T. R. In 50 per cent. of the cases (9 of the old and 4 of the T. R.) general reaction followed; in 2 only where there was iritis, local

reaction was noted, and in these cases of iritis general reaction followed in even more than 50 per cent. of the cases. Besides these, general reaction was found once in a case of recent choroiditis, and once in a case of interstitial keratitis. He thought that local reaction only should be considered as proof positive of the tubercular nature of the iritis or keratitis, but as we so often found general reaction in cases of iritis which clinically show the same signs as those which give rise to local reaction, it seemed to him probable that a great many cases of iritis were caused by tubercle. As to the therapeutic effect he had not sufficient experience to say much except that he had never observed any ill effect from the injection, and in one case of iritis, with strong local reaction, a very evident improvement in the condition was observed.

Dr. John Hern, Darlington, said he had had many cases treated with the new tuberculin used according to Koch's directions. In at least 85 per cent. there was general reaction, and in about 50 per cent. there was some local reaction. As a means of diagnosis it was very useful, but he considered it quite useless for treatment, or even harmful, for some cases appeared to get worse as the result of the increased inflammatory changes set up in the eye.

Dr. Cecil Shaw, Belfast, had seen a case of apparently primary tubercle in a boy aged 9. A small tumor appeared on the inner side of the left eye and as it increased rapidly the eye was enucleated. Previous to this some retinitis was seen in the right eye and a few weeks later signs of meningitis appeared, but these passed off. During the next two years the patient suffered from tubercular abscesses and bone disease on the left arm, leg and side. Under general treatment the health was slowly restored and except for lameness the patient recovered. The enucleated eye showed a typical tubercular growth.

Mr. W. M. Beaumont, Bath, related the following case: A girl aged 10 was seen by him at the Bath Eye Infirmary in September, 1900, with a phlyctenule at the outer margin of the left cornea, which had been seen for 14 days. In spite of treatment, it remained in a chronic condition until the following February, when it healed. In July it broke down, but in three months it healed. For more than two years it gave no trouble, but in February, 1904, she returned in a similar condition. This time it healed quickly. In July, 1904, she was admitted with episcleritis of the same eye; this spread, but by September it had got well. In October she developed iritis in the same eye, and this was cured in a month and the vision, which was 6/6, became reduced to 6/12. A week after her discharge she returned with optic neuritis in the same eye

and this remained until January, 1905, when white spots showed themselves in the macular region. The urine was healthy, the sight remained at 6/12 and the field was full. On February 16 the spots were more numerous; a month later the vision had improved to 6/9, but two weeks afterwards the glands of left side of the neck became enlarged; they increased in size and number during the following four weeks. The child was ailing and low-spirited, with temperature 99.4. On April 20 the retinal spots had disappeared but one of the supraclavicular glands became enlarged and a week later it was increased and thick pus was evacuated, containing numerous tubercle bacilli. During May a retinal hemorrhage occurred near the disc and shortly afterwards she was seen by Dr. Freeland Fergus, who found chronic optic neuritis, but the hemorrhage had disappeared. Her general health began to improve and she became bright and lively, and now, two months later, she is in excellent health, the glands have subsided, she has no cough and there are no signs of tubercle. The right eye had been healthy throughout the vision of 6/6.

The point he raised was whether the tubercle bacilli obtained entrance through the phlyctenular ulcer and if they did not what was the cause of the cycle of events: the iritis was not nodular and there was no tubercular choroiditis. He himself believed with Eyre that a broken down and ulcerated phlyctenule "makes an excellent nidus for the tubercle bacillus," and that this is the explanation of the case. The white spots in the retina have been noted by Story and O'Sullivan in a case of undoubted tuberculo-sis of the retina.

Mr. Tatham Thompson, Cardiff, mentioned a case he had seen eight or nine years ago in which he had excised an eye, the relief of severe pain in which tubercular choroiditis and iritis were diagnosed. Death from tubercular meningitis occurred within three or four weeks.

Sir Victor Horsley rose to obtain the view of the section on the practical point raised by Mr. Jessop that in chronic tuberculosis, choroidal changes did not occur which could be regarded as specifically characteristic. He further wished to learn in reference to the case quoted by Mr. Beaumont, whether the view which he understood had been advanced some years ago, that in acute cases of central tubercular infection the changes in the fundus were specifically distinguishable from those set up by, or accompanying other forms of intracranial disease.

Remarks were made by Mr. Lawford and Mr. Bishop Harman after which Mr. Jessop replied.

Dr. J. Hern, Darlington, made some observations on the effect of the presence of adenoids and other abnormalities in the nasopharynx on some affections of the eye. Soon after Meyer of Copenhagen had drawn attention to the facial and other indications of adenoids, Dr. Hern noticed that they were especially present in cases of phlyctenular eczematous or scrofulous conjunctivitis and unless the nasopharyngeal condition was treated, the eye symptoms frequently recurred; whereas, if the adenoids were removed recurrence did not take place and the child lost all the facial peculiarities that had been so obvious. In all such cases a careful examination should be made by a rhinologist, no matter whether the patient be a child or an adult, as both conditions are manifestations of the so-called strenuous diathesis. In his opinion the eye condition was secondary to that of the nasopharynx. The way in which this was brought about was by means of lowering the general health, and by the actual extension of the inflammatory process up the nasal duct, in much the same way as the Eustachian tube was affected by throat conditions, and deafness was produced.

Dr. A. H. Benson, Dublin, read a paper on "Evolution in Blepharoplasty." He pointed out that in Ireland entropion and trichiasis were among the commonest of eye troubles following trachoma, and as they were the cause of so much misery and damage to sight it was of the highest importance to find out and adopt the best method for dealing with the condition.

Of the hundreds of operations proposed and practiced, but few gave satisfactory results and many of them were objectionable and injurious.

He then traced the various operations that had been employed from the earliest days for its relief, beginning at the old operation of cutting off the margin of the lid, hairs and all. The relief was, of course, immediate, but it caused so much shortening of the lid that the cornea was never again completely covered, dirt got in and a condition of xerophthalmia resulted, so that the last state of that eye was worse than the first. This had to be given up.

The next thing was that the cilia themselves only were excised. This was a great advance, but it likewise produced great shortening of the lids and it also was abandoned.

Now every effort was made to retain the cilia and numerous operations were devised to effect this end. They mostly had for their object the shortening of the skin to make it the same length on the outer side as on the inner. However, two wrongs could not make a right, and these were all found to be wanting and were more or less abandoned.

They then split the lid horizontally, leaving the cilia in the anterior flap, removed a piece of skin, and stitched the flap containing the lashes away from the eyeball, but here again the design was faulty and they took away what should have been left.

The next stage marked an entirely new era. The piece of skin which had up to this time been removed was now transplanted into the raw surface beneath the cilia and the lid was not shortened and nothing was thrown away. Everyone thought that perfection had been reached and the results were infinitely better, but still skin is not mucous membrane and did not act well as such, and the skin had hairs on it which, although not coarse ones, yet they did cause some irritation. Rabbits conjunctiva was substituted, but with poor results and finally the mucous membrane of the patient's own lip was transplanted and this is the latest and by far the best method yet adopted. He described in detail what he termed the St. Mark's operation, for it was devised, and the details were elaborated at that hospital, and he considered it the simplest and most satisfactory of all the operations. If the flap be carefully laid down on the place made for it and there sutured there was little or no risk of its sloughing. Care should be taken not to make the flap of mucous membrane too large, for it does not shrink like skin and it should only just fit, or be a trifle smaller than the place it is intended to fill; slight stretching does no harm. It is also quite unnecessary to wait for the bleeding to stop before applying the flap; the bleeding does no harm if the flap is fixed. The operation is equally applicable to both upper and lower lids and to all varieties of entropion. This operation, he stated, had been performed for the last 21 years at St. Mark's Hospital, and yet but few seem to know much about it. When once the result had been obtained it was permanent, for the flap did not shrink, but remained without perceptible change for years.

Remarks were made by Prof. Hess, Dr. Henry, Mr. Tatham Thompson, the President, Dr. Cecil Shaw, and Mr. Lawford.

Dr. Benson, in reply, said that in his experience when a skin flap was transplanted it never ceased to cause irritation by reason of the hairs on it and the disintegrated epithelium, which even after many years remained the same, and the only condition which might cause it to cease to be annoying is when partial sloughing of the surface of the flap took place. By modifications in detail it could be made suitable for all degrees of the affection.

The president, Dr. G. A. Berry, read a paper on a new test for visual acuteness. He stated that there were two points which could hardly yet be said to be definitely settled. The one had reference

to the scale according to which fractional amounts of the full normal standard should be estimated. The other took into consideration the nature or configuration of the test objects which might be most suitably used when the scale had been decided upon. Although the usual method of representing vision according to the angle subtended by the test object was scientific and fairly accurate, yet it was far from representing in a satisfactory manner what he referred to as the scale of efficiency. In any scheme devised it was necessary that it should be correlated in some way to the ordinary scale of visual acuteness and also it must admit of some degree of variability or elasticity so as to meet the requirements of varying conditions.

For ordinary purposes Snellen's types were the best we possessed, but there were certain defects which might be eliminated by another method more suitable for particular cases: these defects were mainly that all letters were not equally legible, and that when once read and recognized they were easier to read a second time; they were altogether unsuitable for children and illiterate people and those devised for the latter class were not suitable for the former.

In order to obviate these disadvantages he had devised a method of using a number of alternating black and white squares of the same size as the spaces left in Snellen's letters, but covering a considerable area, and the way in which these were seen depended upon the distance they were from the eye. The size of the squares he used were 1, 5, 3, 6 and 12 mm., subtending angles of 1, 2, 4, 8 at 5 meters. At and beyond some particular distance according to the acuteness of sight these surfaces no longer appeared checked, but either ran into lines or looked uniformly gray: the appearance of lines was due to astigmatism, which lines run parallel with the diagonals of the squares. The most convenient way was to mount several circular patches made up of squares of different sizes on a disc, as well as other grey circular patches which could be used for controlling the patient's statements. A test like this would no doubt be useful for anthropological researches for an intelligent savage with a piece of paper printed with squares in one hand and another piece gray in the other, could readily indicate whether the disc pointed to resembled one or other piece of paper he was holding; children also could do this if unable to read. In addition it showed at once slight degrees of astigmatism.

The discussion on Capsular Complications After Cataract Extraction was opened by Mr. E. Treacher Collins, who divided the subject into two heads: (1) Those resulting from its adhesion to

the extraction scar, and (?) those resulting from opacity in connection with it. Class 1 was divided into two groups: (a) An entanglement of a portion of the anterior capsule between the lips of the wound; (b) Agglutination of the capsule to the back of the wound by inflammatory exudate.

He then gave a most convincing lantern demonstration of sections of eyes lost after cataract extraction. All were affected with severe irido-cyclitis and two of them produced sympathetic inflammation in the other eye. In the cases in which the capsule was actually incarcerated in the wound, healing was greatly interfered with, and a bulging wound resulted. The evil effects of adhesion of the capsule to the wound without incarceration were due to the fact that capsule and iris were drawn forwards and so obstructed the angle of the anterior chamber and glaucoma was the result.

The fact that an iridectomy had been done in no way prevented the development of this condition, for a stump of the iris, or some of the ciliary processes were invariably found to have closed the angle. It was by no means every case in which adhesion of the capsule had taken place that glaucoma resulted, much depended upon the position of the wound, the more corneal the section the more forward would the capsule be drawn should adhesion take place.

Sometimes the increase of tension was not noticed until after the performance of a needling, and this, in some instances, was due to the fresh adhesion of the capsule to the needle puncture, or to swelling of the ciliary processes. Simple extraction without iridectomy was less liable to be followed by adhesion of the capsule than when iridectomy had been performed, though it might occur after both operations. Even when the lens had been extracted in its capsule the author had seen adhesion of the anterior hyaloid of the vitreous produce disastrous results.

No method of opening the capsule absolutely prevented its becoming adherent, though the chance was less if forceps were used to tear away the anterior capsule.

For the relief of tension sclerotomy, paracentesis and needling almost always failed. Iridectomy opposite the extraction wound might save the situation, and he had himself completely relieved the tension in two cases by dividing the capsule with Lang's knives where it was adherent.

With regard to the complications resulting from opacity occurring in connection with the lens capsule after extraction, these were due either to retained lens substance wrinkling of the anterior capsule with the growth of new cells lining it, or to adventitious fibrous

tissue. If the anterior capsule were removed with forceps it was obvious that the first two causes would be done away with, and he had lately been removing the capsule in this way. Out of 200 cases operated on in this way, only 19 needlings were required and none wanted a second needling. He also had found that the patients obtained better vision after the removal of the capsule than they did when he was in the habit of opening it with a cystotome. Twenty-five per cent. of his cases obtained full vision after the single operation.

Dr. Bronner, Bradford, thought that the use of capsule forceps was not unattended with danger. In some cases slight displacement of the lens with loss of vitreous was inevitable, and it was far more difficult to withdraw forceps quickly in a restless patient than a cystotome. Capsule complications were much more dangerous in gouty subjects than in others, and he had found diionine drops very useful in allaying cyclitis due to this cause. If iridectomy were necessary he should do it on either side of the one already done, and not opposite to it on account of the astigmatism it would produce.

Mr. Tatham Thompson, Cardiff, asked for the opinion of members as to the value of washing out the anterior chamber with salt solution after extraction. His own experience led him to look upon it as an additional safeguard against the involvement of capsule; he had certainly obtained a higher percentage of good vision by using this method. He had never known it to be followed by any bad result.

Dr. J. Hern, Darlington, said he was much impressed with the necessity of cutting a hole in the anterior capsule, and this he accomplished by cutting out a circle with the cystotome and leaving it to come away with the lens. His experience of glaucoma after extraction had been small, but in those cases he had had he found that Bowman's paracentesis was always followed by good results.

The president, Dr. G. A. Berry, thought the section was greatly indebted to Mr. Collins for his beautiful and convincing demonstration, which clearly proved cause and effect, and the point surgeons had to determine was the best way of dealing with capsule when it had become adherent or incarcerated in the wound.

With regard to the latter he was in the habit of always using the repositor after extraction, and this method he thought preferable to the use of forceps, as advocated by Mr. Swanzy, as fresh pieces of capsule were liable to be drawn up into the wound by them. He strongly advocated the making of a large conjunctival flap, as he thought it lessened the risk of infection. Should glaucoma arise

from the agglutination of the capsule to the wound, he believed that the best thing to do was an iridectomy opposite to the original one on the principle laid down by von Graefe long ago for the relief of primary glaucoma that resisted the first iridectomy. He frequently himself withdrew opaque capsule left after extraction, with forceps, either completely, or if proved too tough, partially, in much the same manner as Mr. Collins did before the removal of the lens. He had for many years ruptured the capsule with forceps instead of with a cystotome in certain cases, though his choice had been a matter of caprice. After what he had heard he should perhaps feel inclined to make a routine practice of using the forceps.

Mr. Treacher Collins replied.

Notes and News.

THE property of the Manhattan Eye and Ear Infirmary on Park Avenue has been sold for \$420,000.

DR. NELSON M. BLACK has moved his offices to the Pierce Building, 128 Wisconsin Street, Milwaukee, Wis.

DR. MARTIN BARTELS has been recognized as privat-docent of ophthalmology in the University of Marburg.

IN a communication received from Professor Hirschberg, he desired, through the medium of the OPTHALMIC RECORD, to thank his professional brethren in America for their extreme and hospitable kindness during his recent visit to the United States.

AT the meeting of the Board of City Trusts of Philadelphia, Dr. Radcliff was elected executive officer of the Wills Eye Hospital for the year beginning July 1. Dr. H. G. Goldberg was elected pathologist, and Dr. W. G. Schlindwein was elected resident surgeon for one year.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.—The following officers were elected at the recent meeting in Buffalo: President, Dr. Casey A. Wood, Chicago; first vice-president, Dr. J. A. Stucky, Lexington, Ky.; second vice-president, Dr. Alvin A. Hubbell, Buffalo, N. Y.; third vice-president, Dr. Emil Mayer, New York; secretary, Dr. George F. Suker, Chicago; treasurer, Dr. Otto J. Stein, Chicago. The place of next meeting will be decided by the Council.

"HE GOT IT IN THE NECK."—The scribes of the daily press can not, of course, be expected to be familiar with ophthalmology, and newspaper accounts of eye operations, etc., are frequently amusing as a consequence. The following from the *Chandlerville (Ill.) Times* is an instance in point:

"F. W. R—— had been troubled with a cataract on his left eye, When the doctor seen that there were no hope of recovering the use of this eye Dr. —— performed one

of the most skillful operations known to science, that of uniting the optic nerve of the left eye to the nerve of the right eye. The operation was performed in the back of the neck."

DR. LOUIS A. PREFONTAINE died at his home in Springfield, Mass., in June. In the death of Dr. Prefontaine ophthalmology in America without a question suffers a serious loss. His preparation for his profession was such as to make a capable man, his natural ability and capacity for work, his interest in his profession was such as to make an unusual man. Dr. Prefontaine graduated at the University of Pennsylvania in 1892. He spent the following two and one-half years in Philadelphia at work in general medicine—this included a service of 18 months as interne at Blackley. In January, 1905, he went to the New York Eye and Ear Infirmary as interne, where he remained until July, 1896. Then he went to Mexico, where he was most successful and where his operative ability, which was developed at the New York Eye and Ear Infirmary, was exercised under conditions to make or break him. After about two years in Mexico he came back to the United States and located at Springfield, where his metal was quickly shown by his great success in practice.

The reason of his trip to Mexico was chronic nephritis, which was discovered during his internship at New York, and this condition was the cause of his untimely death.

In ophthalmology Dr. Prefontaine excelled as a clinician and operator. His judgment was of the best. He wrote little.

Dr. Prefontaine was not one of the types of man that is easy to describe and this is a pity, for his was a type with excellences that some of us could well undertake to copy. As was said, he wrote little, and he was not widely known in the profession. By those who knew him he will never be forgotten, and to them his untimely death will always be a matter of the keenest regret.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, OCTOBER, 1905. VOL. XIV. No. 10, NEW SERIES.

Original Articles.

PTERYGIUM.

THOMAS HALL SHASTID, A.M., M.D., LL. B.

HARRISBURG, ILL.

Definition.—As far as I can discover in the literature available to me, there exists no accurate definition of the term pterygium. Most of the so-called definitions are simply descriptions, and incomplete at that. They neither include all the essentials of a pterygium, nor exclude all the non-essentials of that kind of growth. My own attempt—which, of course, I submit as an attempt merely—to define this term, would be as follows: A fold of conjunctiva, grafted upon the cornea at, or near, its margin, pathologically but not malignantly altered, and intermittently progressive toward the center of the corneal pupillary area.

Some stress is to be laid upon the correct definition of the term, for practical results in the way of treatment must follow from a clear understanding of just what does, and just what does not, constitute a pterygium. In the first place, then, a pterygium is something grafted. It is not a thickening of the epithelium of the cornea, accompanied by a corresponding thickening of the epithelium of the conjunctiva of the sclera. It is a grafting of the epithelium of the conjunctiva, together with the basement membrane of that structure and also of some of the subconjunctival connective tissue, upon, or, more correctly, beyond yet near, the margin of the cornea. That the growth is a mere grafting is to be seen by the fact that, exactly at the corneal margin a slender probe can, very frequently, be passed up under the so-called “neck” of the growth (or graft) clean on out at the other side, when the so-called “neck” can be lifted slightly clear of the eye. The conjunctiva has at some time, either from traumatism or otherwise, become swollen, then has become raw at some spot near the cornea, and, the cornea happening to be slightly denuded, the two uncov-

ered places, one on the cornea and one on the conjunctiva, have become applied to each other by the conjunctival swelling, and the parts have united; then the swelling has subsided, and there has remained—a pterygium. But do not forget that, if the raw surfaces thus applied together had been *continuous* at the margin of the cornea, there would not have been a pterygium at all, but simply a false pterygium, which is an altogether different affair, and one to be handled very differently (if handled at all) since it is never (unless it becomes the subject of malignant disease) progressive.

Etiology.—As already hinted in the comment on the definition of “pterygium,” the cause of this kind of growth (or graft) may be anything whatsoever which produces rawness and swelling of the conjunctiva near the corneal limbus, together with denudation of the cornea near the same line. I do not believe that a pterygium ever develops from a pinguecula, though Fuchs asserts that it does; and I have never met anyone that had seen so strange a procedure as a pinguecula shoving its way across the sclero-corneal margin. The commonest of all causes is probably a piece of coarse sand lodging (as foreign bodies generally do lodge) in the sulcus just above the ciliary border of the upper lid. Now, if this grain of sand simply remained on the same spot in this sulcus, it would, with the movements of the lid and ball, scratch the latter almost indifferently here and there according as the eye might be moved in one direction or another, the greatest amount of scratching being inflicted possibly upon the upper two-thirds of the ball rather than the lower third, though this is doubtful, since, in cases of painful foreign body the lids are kept more or less drawn together and the balls turned upward behind them. But the foreign body does not remain at the same point in the palpebral sulcus. There exists between the cornea and the sclera, at the corneal limbus, a groove; and it is precisely in this groove that the pressure between lid and globe is least. The foreign body, as the lid moves over the cornea, takes the line of least resistance, and, though it remains in the sulcus of the lid, it yet describes an arc, now a longer, now a shorter one, along the corneal margin, according to the extent of the excursion of the lid and the ball—moving laterally, of course, in the sulcus of the lid to allow it to do this. In other words, the movement of the foreign body is a compound one; laterally, in the sulcus of the lid, vertically (with a curve) in the sclero-corneal groove.

And how does this movement of the foreign body produce pterygium? By causing a denudation of the conjunctiva near the cor-

neal limbus, together with a denudation of the cornea near the same line. If the foreign body is so large that it will not quite denude the very bottom of the trench, you have some epithelium left, of course, at the bottom of the trench, and the swollen and denuded conjunctiva, on being squeezed over by the pressure of the lid (often gripped spasmodically) against the denuded cornea, the juxtaposed raw places unite and you have a pterygium. *But if no epithelium remains at the bottom of the sclero-corneal trench, you do not have a pterygium, you have merely a close adhesion between the conjunctiva and the cornea across, and filling, the sclero-corneal trench.* These adhesions between conjunctiva and cornea across and including the trench are very common; and they are also never progressive (though they are formed sometimes sufficiently large at the outset); and multitudes of tiny adhesions of this false class may be seen by the accurate observer in eyes in which they cause no trouble whatsoever, being mere minute white encroachments (of the sclera they at first seem to be) upon the cornea. But the fact that they are ever so slightly elevated above the surface of the eye, together with the fact that they almost invariably occur at the inner side of the cornea, rarely on the outer side and never above or below, proves to a certainty that they are not congenital encroachments, or capes, of sclera projecting into the circle of the cornea. Sometimes a false pterygium (as it is precisely these non-bridging forms of conjunctival encroachment, or graftings, that should be called) is produced by the action of caustics, as of lime, in the eye. Then, a large, round or irregular, lump develops upon the eye across the sclero-corneal margin, almost immediately, without the formation of the tiny vertical tunnel beneath.

If a tunnel is formed (and not too large a one, as will be explained hereafter) you have a true pterygium.

But do all true pterygiûms preserve their vertical tunnels? Undoubtedly they do for a time. And, often, the tunnel persists indefinitely. I have seen pterygiûms to which the designation of "huge" was perfectly applicable, and yet beneath which there existed, at the sclero-corneal junction, this tiny pterygial canal. In some cases in which the canal still persists, it is nevertheless demonstrable only with some difficulty, since, the growth of the pterygium being in these cases irregular, the canal is pulled this way and that and thus becomes so distorted that it can scarcely be searched out in its entirety with the probe. In an extremely small number of cases the pterygial canal may possibly entirely disappear—an occurrence probably due to the

passage through the canal of sharp-cornered foreign bodies with resultant denudation and obliteration: or, possibly, to the action of bacteria. In whatever way it occurs, however, the obliteration of the canal is, I think, very likely to be followed by a cessation of active symptoms and of growth in the pterygium (*pterygium non-progressivum*).

In what way is the pterygial canal responsible for the continued growth of the pterygium? This is a difficult, perhaps an impossible, question to answer. Yet I feel quite sure of the fact itself. I do not believe that any adhesion between scleral conjunctiva and corneal epithelium (or rather corneal stroma) which is formed without a canal at the bottom of the sclero-corneal groove is ever very progressive—except, as already stated, should it become the site of malignant degeneration. I have observed too many cases, it seems to me, to be likely to make a mistake as to the fact itself. Nay, let anyone who has had very much to do with diseases of the eye review only in his memory the different conjunctivo-corneal adhesions that he has seen and ask himself whether he has not observed adhesions of very great size and thickness straddling the limbus and yet without a single sign of that inflammatory thickening of the conjunctiva, attended often with much vascularity, which, in an actual pterygium (even the smallest possible one) invariably extends from the seat of adhesion clear out to the corresponding canthus. He most certainly has. On the other hand, did the adhesion merely *bridge* the trench without filling it—in other words, did a canal exist, so that a true pterygium was present—then the effect of that canal would be observed extending both inwardly and outwardly, both toward the canthus corresponding to the affected side of the cornea and also in the opposite direction toward the center of the corneal pupillary area. My suspicion is that the canal forms an excellent lodging-place for bacteria, where, in warmth and moisture, and protected from all conditions that might affect their growth adversely, they multiply enormously, and their progeny simply invades the pterygial tissue, colonizing then in both directions—both canthus-ward and pupilward. However this may be, I am, as I say, quite sure of the clinical fact that the pterygial canal is essential to the growth—in truth to the very existence—of a pterygium. No canal, no pterygium—only an adhesion.

To be sure, a true pterygium, even with the most perfect canal, will often become stationary and remain stationary for years. But this is no real objection to the theory just stated. Otitic suppuration is caused by the action of germs, and yet it undoubtedly lies

dormant, quite frequently, for months, and even for years, at a time. And so with many other forms of chronic affections due to bacteria. An accident, say a fit of weeping, occurs; and the canalis pterygialis is washed out thoroughly, and the entire colony of germs is perhaps destroyed. Again, certain passing conditions of the general economy may be destructive to the bacteria. In time, however, there will be re-invasion of the canal, and once more the pterygium will become progressive.

There are two facts which strongly tend to confirm my theory that the progress of a pterygium is due to bacterial action in the pterygial canal. The first is, that, generally speaking, there is discoverable in the pterygium, just over the canal, a fine chain of engorged capillaries. In fact, in many pterygia, the most congested and inflamed-looking part of the entire growth will be found precisely at this spot—just over the pterygial canal. The second fact which tends to confirm my theory of the bacterial origin and progress of pterygium is that, when an adhesion is formed, as it sometimes is, with a very large, wide-open canal, no true pterygium ever develops, but the graft remains an adhesion only, precisely as in the case where the graft was formed without the production of any canal whatever. In these cases, the canal is so large and so free that the tears and other secretions wash easily through it—in other words, irrigate it and render it not merely occasionally, but day after day and every day, entirely germ-free.

Treatment.—At first thought, then, one might be inclined to say that the complete treatment for true pterygium would be to destroy the canal; obliterate that, and, it would seem, all else would take care of itself. Yet not so. That might, nay, most unquestionably would, if done thoroughly and accurately, stay all further growth of the structure. But the pterygium would not shrink very much from its then attained size, if nothing else were done. It would, to be sure, shrink somewhat, by reason of losing its excess of vascularity; but, as I have discovered by actual experiment in one or two cases, it would not disappear entirely. And what the patient wants is precisely an entire disappearance of his deformity. In a certain sense, this desideratum can be reached. How? By an operation which consists in the destruction of the canal and also of something more than that—something, namely, adequate to remove the excessive tissue already produced.

Concerning the pterygium operations, as now performed, I will simply say that, not infrequently they are found miserably ineffective. I have seen pterygia that were increased to twice and

three times their previous size by removal, and so has every observer who has seen many cases.

The chief requisite, of course, is to obliterate the canal. After having done this—after having removed all the epithelium from the interior of the canal, then one need not fear in the least that the operation of removal will ever (humanly speaking) be followed by a return of the growth in an exaggerated form.

The way in which the obliteration is to be done is simple. Cauterize the canal with a fine wooden probe, dipped in carbolic and wiped dry. However, do not forget the dry-wiping. Insert the tiny probe in the canal, and let it remain there several minutes. The moisture of the canal will bring out the carbolic enough to destroy all the epithelium. You will often observe, after withdrawing the probe, that a fine grayish, or yellowish, line along the corneal margin now marks the course of the canal, supplanting the red, highly vascular band which may have marked the course of the canal before the cauterization. If you are not certain that you have destroyed the epithelium entirely, make a second, or even a third, application—taking care each time that the surface of the probe is well wiped. It is better to take plenty of time and to cauterize slowly than to use more caustic than is necessary—in which case, of course, a painful eye might be the result. In this connection it is to be observed that no, or but little, more carbolic need be used than is employed every day by many oculists for the cauterization of corneal ulcers.

Then you take off the pterygium. Pick up the growth at the neck—i. e., just over the now cauterized canal—insert the blade of a Graefe's cataract (or other very thin and slender) knife, with the edge toward the pupil, and gently shave—being careful to shave deep enough to remove all the pterygial tissue, and yet, as a mere matter of course, not deeply enough to penetrate the anterior chamber.

What to do with the part now detached? Some say, put a thread through the tip of it and turn it downwards at nearly a right angle to the long axis of the main body of the growth, and then sew it into the conjunctiva. That, they say, will prevent the pterygium from recurring. But they never tell us just why such a procedure would tend to prevent a recurrence any more than the snipping clear off of the detached portion would do it, and I have never been able myself to make out why, nor have I ever been able to see that the procedure did have any particular effect on the tendency of the pterygium to recur. I do not believe that, in reality, it has any such effect. But I know what I once saw that proves some-

thing else; and that was this: After removing a pterygium by the method just described, namely, that of turning down and suturing the corneal portion, I took the precaution (or post-caution) to see if my pterygial canal was still present. And it was present. The breadth of my knife, slight as that was, was sufficient, after the blade had been pushed through the neck and lay *in situ* for moving over the cornea, to keep it from lying down precisely in the sulcus between sclera and cornea. It would have had to be the size and shape of a fine hair to lie close to the bottom of that groove. Hence, the canal was entirely missed, and this in spite of the fact that, before perforating the neck with the knife, I stretched the neck well upward with forceps. As a matter of fact, the canal lies not *in* the neck of a pterygium, but *under* it. And, of course, I passed above the canal. Even had I got into the canal, and completely removed all the pterygial tissue above it, there would have been the epithelium still at the bottom, and, with the new tissue which would be formed on the denuded sclera after the operation, and the swelling which would have taken place therein, I should have had a fair prospect of another bridge across the cornea. That, to be sure, would have meant another pterygium. Destroy the canal entirely, and do this as the very first step of the operation, if you can get the probe to go through the passage. If you can not, cauterize from above downwards, and from below upwards, just as far as you can, and then, after shaving off the head, cauterize slightly several times along the very bottom of the sulcus through the whole extent that was covered by the pterygium, and even a little beyond that—above and below.

The obliteration of the canal may be done as a separate operation, the procedure of removal being left till the canal is entirely and certainly obliterated. This can often be done with advantage. There frequently exist, on the other hand, circumstances which render it advisable to perform the entire operation at once.

Finally, trim back the scleral part of the pterygium a very little, but not much. Do not greatly diminish the size of the ocular conjunctival blanket. There is only so much of that blanket, and but little can be spared. The vascularity of the growth will slowly, but certainly, disappear.

As to non-operative treatment, the books in general (I do not know but universally) state that nothing to advantage can be done for pterygium except by removal. This is not quite true, entirely apart from the procedure which I have just detailed. Much, very much, can be done to restrain the growth of a pterygium by injecting the canalis pterygialis with mild antiseptic solutions—

as well as, sometimes, flushing out the groove which lies beneath the overturned margin of the scleral portion of the growth. The occasional instillation of adrenalin, or adnephryn, or some other of the various suprarenal preparations also assists in restraining growth by diminishing vascularity. Cauterization and consequent destruction of the pterygial canal is, however, a vastly more effective way to restrain further increase in the size of a pterygium. Obliteration of the canal, combined with removal of the pterygium, as above indicated, is the correct procedure for the safe, and well-nigh invariably permanent, entire destruction of a pterygium.

Complications.—I wish that I had space to enter into a consideration of the complications to which a pterygium not infrequently gives rise—by its affording in the very eye itself a hot-house for the breeding and dissemination of various sorts of germs. Pterygium is not always the worst thing about pterygium. At least two of these diseases, however, I will mention—chronic conjunctivitis and inflammatory affections of the apparatus lachrymalis. Pterygium as a cause of astigmatism, by reason of the constant pulling on the cornea in the horizontal meridian, by the pterygium, is well known, of course.

The cure, or amelioration, of the complications of pterygium is, of course, effected chiefly by the cure of the pterygium itself in the way already described.

Summary.—Pterygium, then, is, in a sense, not a new growth. It is not a growth, but a graft—a graft of the scleral conjunctiva over upon the cornea, with the resultant formation at the corneal limbus of a canal lined with epithelium. There is no reasonably sure way to remove the growth without obliterating the canal. Should conjunctivo-corneal adhesion again take place, it would be an adhesion merely and solely, and not a pterygium. The best way to obliterate the canal is by means of carbolic on, or rather in, an exceedingly fine wooden probe. The application should be light, and should be repeated if necessary. Removal of the growth in the way suggested may then follow, either at once or a few days later, as, in his judgment, the operator may deem best.

Finally, the sum and substance of this whole paper is—remember the pterygial canal. That tiny tunnel bears the same relation to the surgery of pterygium, that the lumen of the vermiform appendix does to the surgery of the right iliac fossa. The general surgeon will, under certain circumstances, break up intestinal adhesions; he will evacuate abscesses; he will attend to various other particulars also, if need be; but he will not, at least in the ordinary run of cases, neglect to rid his patient of that tiny, ap-

parently insignificant, passage, the so-called "death-trap." So, too, in the surgery of pterygia. Whatever procedure for removal of the pterygium one adopts, one will not, if wise, forget to rid one's patient of that breeding-place, that hot-house, that ambushade for germs, the pterygial canal. That canal is at the bottom of the whole matter, in a causative, as well as a physical, sense.

VERNAL CONJUNCTIVITIS IN THE NEGRO.

DUNBAR ROY, M.D.

ATLANTA, GA.

[Illustrated.]

I have been very much interested in the article read by Dr. Posey on "Vernal Conjunctivitis" at the New Orleans meeting of the American Medical Association, and even more so by the various discussions which followed the reading of this most excellent paper. It certainly, more than ever before, made me cognizant of the fact that either the character of such cases differs very materially in different sections of the country, or that each observer sees things objectively in a very different manner. I suppose that there is no way of ever finding out whether objects appear universally alike to all individuals, unless the same were reproduced again by drawings, and as few among us have this artistic skill we must be content with verbal representations. The fact that the same type of disease differs in various localities is universally conceded, such being due not only to the elements of what we call climate, but also to the environments and modes of living among the people.

When one from a Southern or Western city visits the large clinics in New York, he sees a distinct type of cases which he never has nor ever will see in his practice at home. Even in my own state these differences are noted. In Atlanta, with an elevation of 1,200 feet and clay soil, the type of eye cases differ from those seen in Savannah, where the elevation is low and the soil sandy. The same differences exist between Atlanta and New Orleans. Hence I feel that it is never right to criticise a fellow practitioner because he gives symptoms of supposedly the same disease as quite different from those seen by you in your own locality. Consequently I take it for granted that the wide difference of opinions expressed in the discussion of Dr. Posey's paper, was due largely to the fact that the speakers represented different sections of the country.

During the last eight years in a large out-door clinic at the At-

lanta College of Physicians and Surgeons, nine-tenths of whose patients are colored, I have observed ten cases which I have designated and so entered in their histories as circumcorneal hypertrophy of the conjunctiva. In the study of these cases they have been found to represent the so-called vernal catarrh at least so far as we can find a composite group of symptoms, for one is bewildered at the varied subjective and objective symptoms which he finds described by various observers as representing the type of these cases. In all of my cases they represented the so-called bulbar form. In not a single instance has the palpebral portion of the conjunctiva shown any marked pathological changes. In every case there was a most minute examination of the conjunctiva upon the upper and lower lids and beyond some congestion and redness these surfaces presented a most normal appearance.



Fig. 1.—Illustrating a marked degree of vernal conjunctivitis. The black portion shows the only part of the cornea not covered by the hyperplasia.

Without narrating the history of each individual case, I shall speak of them all under one general group because of the similarity of most of the symptoms, both objective and subjective, and only individualize where there were some features distinctly prominent and different from the rest of the group. The prominent fact must be borne in mind that all of these cases occurred among negroes, notwithstanding the fact that we sometimes see the statement made that vernal catarrh does not occur among this race of people, just as the mis-statement is also made that this same race is not afflicted with adenoids in the naso-pharynx. The only reason for the existence of these different opinions among Southern observers must be due, as I have said before, to the fact that the type of cases differs in different localities.

Age.—The youngest in these 10 cases was 3 years and the oldest 25, the majority of them being between 6 and 12 years.

Sex.—Practically no difference was found on this point, 6 being males and 4 females.

Type.—The 10 cases were all of that form designated as bulbar and I have never seen in my city a case where the palpebral conjunctiva showed changes similar to those described by other observers.

Symptoms.—These were quite characteristic in every case, differing only in the extent of involvement. In only one was this their first attack, all of the remaining having suffered with the disease from 2 to 5 years.

The subjective symptoms were by no means prominent, those usually complained of being photophobia, a heavy feeling, burning and gritty sensation about the lids, but in none of them was there any marked discomfort.

The objective symptoms were more characteristic. In those suffering from the first attack there was some congestion of both the bulbar and palpebral conjunctiva, with some signs of a catarrhal discharge. The palpebral conjunctiva showed no changes beyond that of congestion. On the ball, at the sclero-corneal margin, there was an elevated, circular, waxy and gelatinous looking mass, extending from one-half millimeter to even 4 millimeters into the cornea, and which was always widest at the upper and lower margins of the cornea. This latter characteristic was evidently due to the mechanical action of the lids, rubbing back and forth, causing an undue irritation and a further extension of the hyperplasia. In one case, a photograph and drawing I show you to-day, the ring of hyperplasia extended so far on the cornea that there were left only bits of clear cornea about 4 millimeters in diameter at the lower left quadrants, so that the patient holds his head to one side in order to see. At that portion of the cornea where the membrane stops there were absolutely no signs of a present or even a former involvement of this structure in inflammation.

Pigmentation at the conjunctival edge of the hyperplasia was by no means infrequent, for pigmentation in the conjunctiva, especially in the superficial thickened layers at the inner and outer canthi, is a common occurrence in the negro race.

One peculiarity noted in several of these cases showing this pigmentation was the fact that the pigmentary layer of the skin on both the upper and lower lids made this region very much darker than the surrounding areas, giving the patient the appearance of dark circles around the eyes. In no other class of cases have I noted this peculiarity in the negro race.

Where the ring of hyperplasia had extended to any marked de-

gree upon the cornea, the eye was cocainized and an attempt made to see whether the gelatinous mass was really a part of the superficial layers of the cornea or only an outgrowth from the conjunctiva and resting upon it as a distinct membrane. In every case it was seen that this hyperplasia was practically a part of the cornea itself and could not be separated from it without cutting or shaving it with an angular keratome. Pieces were in this way removed as deeply as possible and submitted to Professor H. F. Harris for examination. His report is as follows:

Specimens were fixed in Heidenhain's bichlorid of mercury solution. Specimens were embedded in paraffin, cut and sections stained with hæmatein, iron-hematoxylin (Heidenhain's), carmalum with picric acid, gentian violet by Van Gieson's method, Unna's alkaline methylene blue differentiated in his fuchsin-tannic acid, and finally carbol-toluidin blue, which proved to be the best solution for staining.

The specimens did not include any of the corneal tissue proper, although a portion of the adjoining healthy conjunctiva was embraced in the sections. On microscopic examination, the neighboring healthy epithelial covering of the cornea was found to be normal, but as the diseased region was approached areas were encountered in which many of the epithelial cells of this layer were found to have lost their usual structure; the cells were swollen and their contents consisted of a granular detritus in which the nuclei may or may not have been more or less preserved and in addition to this the cells evidently in life contained more or less liquid.

In this area the epithelial layer was in many cases greatly thinned, this being the case to such an extent that it was often not more than one-third of its usual thickness. In the lower layers of this membrane, numerous eosinophile cells were found between the epithelial cells. In this region and also in that covering the lesion, pigment cells were not so numerous as in the normal areas.

Projecting down into the deeper tissues there were numerous ingrowths of the surface epithelial layer. At the point where these connect with the surface membrane, they generally consisted of masses of epithelium that were made up of two to four cells; but as these prolongations extended further downward they terminated in clubbed extremities, which were frequently from 15 to 20 cells across—some of them being as much as 0.175 mm. in diameter.

Beginning a short distance below the point where these pillars originated, there often began a more or less centrally located opening which enlarged as it passed downward and terminated in a rather long central cavity in the bulbous extremity of the projec-

tion. Oftentimes these cavities were found entirely empty, but in other instances desquamated cells and granular debris were encountered within them. These cavities were always separated by at least two epithelial cells from the surrounding tissues and oftentimes there were as many as three, four or five elements intervening.

From the lower surface of the epithelial layer to the extreme limit of these projections there was a distance from 0.125 to 0.225 mm. In their beginning portions, the cells composing these projections, resembled in every way the cells of the lower layer of the epithelial membrane of the cornea; but lower down they were more irregular in form and separated from each other by minute interspaces: the cells here resembled very much those in the Malpighian layer of the skin, though as to whether they were united to each other as are these cells, could not be stated with certainty.

Lying within these groups of cells, very peculiar bodies were encountered; they were apparently swollen epithelial cells, having a diameter about 0.020 mm., within which there was apparently in life a clear fluid where there was suspended an oval body measuring about 0.010 mm. in diameter, and which stained throughout with nuclear dyes and contained towards its center what was apparently a nucleolus. As to the true nature of these bodies nothing can be said with certainty, they were probably the result of cell degeneration, but bore a very close resemblance to some animal parasites.

These projections were limited externally by a layer of very small cells containing spindle shaped nuclei. Between these epithelial ingrowths and extending between them and the surface layer of epithelium were multitudes of lymphoid and plasma cells and a considerable number of eosinophile cells. In the deeper portions of the specimen there was found some newly formed fibrous tissue.

SUMMARY.

Principal alterations were:

1. Localized thinning of the surface layer of epithelium; the swelling and vacuolization of many of these elements: the presence of eosinophile cells between these elements.
2. The projection downward into the deeper structures, club-shaped columns of epithelium containing usually more or less centrally located cavities.
3. The presence in these cells of peculiar bodies which may be the result of degeneration of these bodies, or possibly parasites.
4. The presence between these columns of enormous numbers of

plasma and lymphoid cells, quite a number of eosinophile cells and some newly formed fibrous tissues.

The type of these cases was so characteristic and the results in the treatment so unsatisfactory that one was compelled to recognize them as a distinct entity. The fact that such patients always applied to the clinic during the warm months made me recognize the disease as characteristic of this season. Nor was this affection limited to those with frail constitutions, or to such as presented symptoms of scrofula or hereditary syphilis, but in most cases they were in subjects who appeared healthy in every other respect. In two cases the patients belonged to the same family, but my observations do not lead me to the conclusion that it is hereditary.

The extent of the circumcorneal lesion varied greatly. In some the gelatinous lymphoid elevation was so slight that it could only be seen by having the light to fall upon the eyes at a certain angle, while in others the cornea would be encroached upon to the extent of several millimeters. In those cases where the disease had been periodically present from one to three years and which were seen during the interval, i. e., during the winter, the peripheral edges of the cornea showed changes resembling arcus senilis, indicating that the superficial layers of the cornea were also involved in the pathological process. Several cases were seen where the active process had ceased previously and only this latter condition remained, but such cases are not considered in this paper.

At the New Orleans meeting referred to, Dr. Posey's thorough paper on this subject was very freely discussed and very various opinions and observations were there expressed. Dr. Bruns, in the discussion, said that he had never seen a case of vernal conjunctivitis among the negro race in which opinion Dr. Claiborn agreed, and that the cases so reported were nothing more than a form of phlyctenular conjunctivitis. In my own clinic I have also recognized the fact that phlyctenular conjunctivitis in various forms was common in the negro race, but the cases here reported were certainly of a very different type and quite similar to cases of the bulbar form of vernal catarrh seen in the European clinics.

Dr. Bruns' argument that such cases as these were phlyctenular, to use his own language, because of "the transient nature of the disease, the readiness with which it seems to yield to simple treatment, the local application of mercury and the internal administration of small doses, together with keeping the conjunctiva clean, suffice to bring about a cure in a very short time," is the very reason why his cases do not correspond with those seen by me. My

own experience shows that these cases are not transient but have recurred and persisted every year during the warm months; that they have not yielded to simple treatment or even successfully to any treatment, although every method has been tried, and that, furthermore, distinct changes can be seen in the periphery of the cornea after the active process has subsided. I believe that these cases are more common than is to be supposed, the trouble being that they are often treated for something else. I have had two cases brought to my clinic, one of which was being treated for granular lids and the other for a simple conjunctivitis, both having been treated for two years, but only during the summer months.

It is almost a matter of impossibility to say in just what proportion of conjunctival diseases cases of vernal catarrh occur among the negro race, for it is a well-known fact that this race of people never consult an eye clinic until the disease has so far involved the eye as to occasion great pain and suffering. Ordinary conjunctivitis is usually allowed to run its course unless it becomes purulent in character and frequently these cases wait until the cornea is already seriously affected. Consequently I am in no position to affirm or deny Posey's estimate of one case in every two to five hundred conjunctival diseases. Furthermore, in only two out of ten cases was this their first attack, for it was only after a persistent recurrence that they could be brought to the point of seeking relief. The few cases seen among the white race showed very much more the signs of inflammatory congestion about the bulbar conjunctiva than that seen among the negroes, consequently the disagreeable subjective symptoms were more pronounced in the former than in the latter. In regard to the treatment, nothing can be added to the long list of remedies proposed and which has been fully mentioned by Posey. Mild applications were used, caustics were tried and even surgical intervention was resorted to. In three of the worst cases, where the circumcorneal gelatinous mass was the largest, this was shaved off with a knife and afterwards the surface touched with a strong solution of nitrate of silver. This was successful in seeming to arrest the progress of the disease. By the use of a mild astringent wash of sulphate of zinc, adrenalin chlorid and water, together with the daily massage of the ball with the yellow ointment, the acute symptoms could usually be kept under control until the cool weather would cause a cessation entirely of the acute process.

Under such treatment I found that the severity of the symptoms decreased each season and after three or four years there was very little trouble. Whether the remedies used were responsible for this

betterment or that the disease is more or less self-limited and runs its own course, I am unable to say. In the severest forms, i. e., where the ring of hyperplasia is very broad without any marked acute inflammatory congestion, I am fully convinced that surgical removal of the hyperplasia is the best mode of procedure, to be followed with continuous application of milder remedies.

TRACHOMA AS TREATED BY DR. HERMAN KUHN^T OF KOENIGSBERG.

FRANK E. BRAWLEY, M.D.

CHICAGO.

The writer spent some time in the center of the trachoma district of East Prussia, Koenigsberg, and was fortunate enough to be able to study Professor Kuhn^t's methods of treatment at first hand.

The treatment of trachoma in East Prussia, where it is very prevalent, has for the past four or five years been under government supervision.

Physicians from all parts of the district are given special instruction in the diagnosis and treatment of this terrible disease, in a series of special courses by Professor Kuhn^t in his hospital at Koenigsberg. These physicians make systematic examination of school children, factory employes, etc., and those found to be suffering from trachoma are obliged by law to receive treatment and if necessary to go into the hospital at Koenigsberg.

The entire expense of treatment, living expenses and railway fare to and from the hospital is borne by the government. The hospital is not a large one and contains only about twenty-five beds, as the clinic is almost entirely an ambulatory one. Only the severe cases with corneal involvement and freshly-operated cases are cared for in the hospital. The whole neighborhood about the hospital is devoted to boarding houses, where the patients reside during the treatment, reporting as often as necessary.

The clinic averages twenty-five new patients and in all about two hundred are treated daily. The treatment is the climax of Dr. Kuhn^t's extended researches, and he is confident that he has, as he expresses it, "spoken the last word upon the subject of trachoma treatment." This may be classed as medicinal, mechanical and operative. The first method is used chiefly for acute cases, after-treatment and in recurrent infections. These cases are treated in the usual way, with silver nitrate 2 per cent, copper or alum stick, and, in short, much as trachoma is treated in this country. Individual sterile glass applicators and camel-hair brushes are

used in treating each case. A glass irrigator, or undine, with physiologic salt solution is used to remove the excess of medication from the sac. Protargol is used in 10 per cent. solution in glycerin, especially in freshly-operated cases and after the expression treatment.

The more severe or chronic cases, which do not yield to the medicinal method, are prepared for operation. In cases with succulent granules, these are expressed with the instrument designed by Kuhnt. This consists of a solid plate opposed to a perforated plate of equal size and both fitted to the arms of a pair of strong tissue forceps. The expressors are three in number, two sizes with rectangular plates and one oval in form and somewhat pointed for convenience in reaching granules in the plica semi-lunaris. The forceps devised by Stevenson of Akron, Ohio, are, however, more practical than those just described, as the edges of the perforations are sharper and the size convenient for all purposes.

Local anesthesia is employed. Cocain in 10 per cent. solution is instilled in the conjunctival sac and injected beneath the conjunctiva and the skin of the lid. The perforated plate is introduced as far as possible into the cul-de-sac and with the solid plate resting on the outer skin surface, the lid is forcibly compressed between them, thus rupturing the granules and squeezing out their contents. The whole lid is treated until all granules have been expressed. Powdered airol is dusted into the sac after irrigating with bichlorid solution (1-5,000), or 10 per cent protargol is instilled. The eye is then bandaged for protection and the bandages changed daily. Usually considerable reaction follows, and this is controlled with iced applications. The patient, however, has a "black eye" for some time afterward. As soon as the eye becomes quiet, usually in three or four days, the medicinal treatment is resumed. If the case is still resistant the removal of the tarsus is considered. The treatment has by this time usually brought about a limitation of the disease to the tarsus and that portion of the retro-tarsal folds immediately adjacent and this whole surface must be sacrificed.

Kuhnt employs three operative methods. The first is the simple excision of the diseased portion of the retro-tarsal folds. This operation he employs where there is no great involvement of the tarsus. In the lower cul-de-sac the simple excision is the only possible operation owing to the small tarsus, and here he often removes a small strip from the convex border of the cartilage, together with the diseased folds of conjunctiva.

Where the tarsus is extensively involved and the other methods have failed, the so-called combined excision is used. Kuhnt removes, in this operation, the diseased retro-tarsal folds, together with all of the tarsus except a narrow strip left at the lid margin to retain the lid in its proper form. The technic of the operation is as follows: The lid is turned and the convex border of the tarsus is fixed with two pairs of rat-toothed forceps having a sliding lock mechanism. The lid is now turned again upon itself, exposing the retro-tarsal folds, and the forceps are turned over to an assistant to hold. The first incision is through the conjunctiva parallel to the convex tarsal border and includes the diseased portion of the folds. Here it is necessary to avoid Müller's muscle, which is bluish in color and may be seen shining through the thin layer of overlying connective tissue after cutting through the conjunctiva. At this juncture three stitches are put into the extreme edge of the remaining conjunctival folds and the folds carefully dissected up with the blunt-pointed scissors as far as the reflection upon the eyeball, traction being made upon the stitches to facilitate the dissection. Waxed, black, braided silk, No. 2 sutures have been found preferable for this purpose by Casey Wood because of the minimum friction while passing through the tissues, absence of kinking and of mechanical irritation from the knots and the ease with which they may be seen and removed. The lid is now released from the two forceps and grasped at the center of its margin by a forceps having bent tips made to avoid injury to the broad cartilaginous lid margin by curving over it to fasten in the tarsal plate behind. A bone spatula is now placed under the turned lid and next the skin surface in order to afford a firm support for the next incision. This incision begins at the inner and extends to the outer canthus, uniting the extremities of the first incision but including both the conjunctiva and the tarsus. This incision curves opposite the middle third of the lid so as to leave a broader band of cartilage for support, curving again toward the lid margin as it approaches the outer canthus. Here again the bluish muscle of Müller must be carefully avoided. The tarsus, with its attached conjunctiva, is now grasped at the inner canthus with toothed forceps and carefully dissected away from the loose underlying connective tissue with blunt-pointed scissors, cutting as close as possible to the tarsus and using blunt dissection where possible. All forceps are now removed and the lid allowed to close. The three sutures first inserted are now drawn to lie in lines perpendicular to their points of insertion. Where these sutures cross it the lid margin is grasped by toothed forceps and each suture is passed through the tarsus

exactly at the point marked, thus giving accurate approximation of the wound edges.

One knot is now tied loosely and the patient is allowed to recover, in the case of a general anesthetic, sufficiently to open and close the lids. If the suture is tied too tightly the lid will now be seen to pucker and should be loosened until the movement is normal. If necessary the lid may be turned and the retro-tarsal folds dissected still further to allow them to completely cover the space of the sacrificed tissue and so prevent the puckering and interference with the normal lid movements. For ease in removal, Kuhnt now leaves about an inch of the suture ends. Here it may be said that it would be well to avoid direct contact of the sutures with the cornea by placing one suture opposite each corneal margin, leaving out the central suture and using four instead of three sutures. The after-treatment consists in gentle irrigation with a warm boric-acid solution and the application of sterile vaselin, with which, if necessary, atropin may be combined.

The possibility of corneal complications is very slight, still one must remember that corneal ulcers may appear very suddenly in these chronic trachoma cases, as was illustrated in a case upon which Dr. T. A. Woodruff was about to do this operation in St. Luke's Hospital in this city. The eye looked perfectly quiet until the day set for the operation, when an ulcer was discovered. In this case if the ulcer had appeared a few hours later it would have been charged against the operation. Kuhnt claims that postoperative complications are exceedingly rare and when they occur they are due to faulty technic.

There is also another form of operation used in cases where the disease seems to be confined to the tarsus, the granules having disappeared from the conjunctiva. Here the conjunctiva overlying the diseased tarsus is saved by careful dissection, the tarsus itself being the only tissue removed. The indications for this procedure are as follows: In cases in the cicatricial stage, where the tarsus is much thickened or curved out of shape, where the excessive weight of the thickened tarsus brings about a mechanical ptosis, entropion or pannus.

The medicinal treatment should be resumed as soon as healing takes place. Great care is exercised to prevent re-infection from one of the many virulent cases always present in the Koenigsberg clinic. Granulation tissue and isolated trachoma granules are destroyed with the galvano-cautery, using a small ball-shaped electrode. The entire conjunctival sac is carefully inspected daily, the upper folds being exposed by turning the lid over a glass rod, the

rounded end of which pushes the folds into the new. Each granule or streak of grayish translucent appearance seen during these inspections is at once snipped out with scissors or destroyed by cautery. Fresh, soft crops of granules are often broken up with the Russian brush, which resembles a mucilage brush with steel bristles. They are then massaged with cotton-wrapped probes saturated with 10 per cent. protargol.

The writer saw several cases where one lid had been operated upon and had entirely healed but the patient had refused operation upon the other with resulting progress of the disease into entropion, trichiasis, pannus, loss of vision, etc. No bad results were seen following the operative treatment.

These operations are part of the routine treatment and average at least ten in number daily. Such extensive clinical experience with good results in the treatment of this condition can not fail to have great weight in favor of Kuhnt's methods.

He claims to cure these cases in from one to three months, in contrast to methods now in vogue which require six months to two and three years. In the working classes such a treatment as the latter would mean famine.

In conclusion, the writer wishes to extend thanks to Professor Kuhnt and his assistants for the many courtesies received at their hands while in Koenigsberg.

72 East Madison Street.

Reviews.

TOTAL BLINDNESS FROM THE USE OF CHEWING TOBACCO.

When we see a case of partial blindness which we feel reasonably sure is due to the use of alcohol or tobacco we are apt to give a favorable prognosis, at least so far as the occurrence of total blindness is concerned, if the patient will abstain. Occasional reports like the following from Widmark,¹ indicate the necessity for qualifying this prognosis. Widmark's patient was a man of 39 years who had chewed large quantities of tobacco (one pound in two weeks) for many years. Vision was reduced to fingers at 45 and 75 cm. The field showed a slight peripheral contraction, with complete blindness for red and green. The outer limits for blue were nearly normal, but there was a central scotoma for blue and white. The patient was taken to a hospital and was deprived of tobacco and given iodid of potassium, whereupon his sight improved rapidly and he left the hospital after a month. When seen three months later he was found to be totally blind, with complete optic atrophy. In the abstract at hand it is not specifically stated that the abstinence from tobacco was continued after the patient left the hospital, although this is to be inferred.

The reviewer has seen one case in which the patient, a young druggist, had marked amblyopia accompanying the excessive use of tobacco, and on withdrawing the latter his sight improved rapidly, becoming practically normal, so that on his own responsibility he resumed smoking. This was followed soon by another attack of amblyopia, and this time, although he was glad enough to stop the tobacco at once, his sight continued to get worse, in spite of iodid of potash and a sweat cure, until he became completely and permanently blind from optic nerve atrophy. A similar result was also seen in the case of a barkeeper, with alcoholic amblyopia. This class of patients so easily relapse into their old habits after a recovery from an attack of toxic amblyopia that it is well for us, in painting the dangers of their situation, to keep these exceptional cases in mind. Widmark's case is also of especial interest on account of the contention made by some that tobacco chewing does not cause tobacco amblyopia, the latter being caused, not by the nicotine itself, but by the substances produced by the combustion of the weed.—GIFFORD.

1. Abst. in *Ophthalmologische Klinik*, Aug. 20, 1905.

DEATH FOLLOWING THE USE OF MUELLER'S PROVISIONAL PROTHESIS.

Some time ago the firm of F. A. Mueller's Sons, in Wiesbaden, introduced to the trade a hollow piece of glass shaped to conform to the normal conjunctival cul-de-sac, to be introduced immediately following enucleation, for the purpose of preventing any shrinkage during the period preceding the fitting of the glass eye. It was thought that this proceeding would be entirely safe, but the following case, reported by Ulbrich¹ from the clinic of Czermak indicates the contrary.

The patient was a man of 65 years, whose right eye was enucleated on account of sarcoma of the ciliary body. Immediately after the operation on May 31st, Mueller's prothesis was introduced. Nothing unusual was noticed until June 9, when pain was felt in the left ankle joint and a temperature of 101.3. June 10, redness and swelling of the joint; temperature, 103.5. June 11, bronchitis and slight emphysema, acute exudate into the left ankle joint, profuse secretion from the conjunctival sac. The patient was transferred to the surgical clinic, where, under Bier's stasis, the condition of the joint improved, but uncontrollable diarrhea, high temperature and other symptoms of general sepsis developed, and the patient died on June 17. At the postmortem the ankle joint was found filled with pus; prothesis apparently had been allowed to remain in the conjunctival sac until death, and on its removal the conjunctiva was found covered with a thick, yellow, smeary secretion with a button of granulation filling the wound. From the fact that both the conjunctival secretion and the pus in the ankle joint contained an abundant, almost pure culture of the same streptococcus, Ulbrich considers it certain that infection of the conjunctival sac was the cause of the joint affection and the general sepsis.

To any who may have been inclined to adopt this device of Mueller's this case will doubtless give pause, which Ulbrich's suggestion that if the "interim prothesis" is to be used the conjunctival wound must be closed, will hardly break. The wonder is that any oculist should adopt such a device, since with a normal conjunctiva the difficulty in obtaining a satisfactory prothesis does not come from want of room for the glass eye, but from the sinking back of the orbital tissue, which could only be increased by the "interim prothesis."—GIFFORD.

1. Ophthalmologische Klinik, Aug. 5, 1905.

Reports of Societies.

THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Tenth Annual Meeting, Held at Buffalo, New York.

Sept. 14, 15 and 16, 1905.

Under the Presidency of Dr. Hanau W. Loeb, St. Louis, Mo.

An address of welcome was delivered by Dr. Walter D. Greene, Commissioner of Health of Buffalo, which was responded to by the President.

PRESIDENT'S ADDRESS.

President Loeb, after referring to the rapid rise of specialism, its divisions and subdivisions, devoted the rest of his remarks to the medicolegal aspects of certain cases of diseases and injuries and complications of the nose, throat and ear. The physician is called upon to give his opinion and advice in certain cases as an expert in court. There are essential differences between the testimony of experts and that of ordinary witnesses. Fractures of the nose, of involvement of the accessory sinuses may be the bone of contention in court. He cited several cases in point.

VICE-PRESIDENT'S ADDRESS.

DR. DERRICK T. VAIL, Cincinnati, Ohio, first vice-president, spoke of the medicolegal aspects of ophthalmological cases, and said that expert testimony implied an accurate and detailed knowledge of the science of ophthalmology, coupled with abundant practical experience and a complete understanding of the plaintiff's condition. He cautioned against examining patients cursorily, as this may lead to a wrong diagnosis. Illustrative cases were cited. Every tissue and organ of the body should be carefully examined before expert testimony is given in court in regard to a given case. Cases of simulation called for great skill on the part of the oculist. He pointed out and emphasized the importance of the expert using simple language in court. Answers to questions should be short, pointed, and given in understandable English at all times, if possible.

THE LENS CAPSULE IN THE OPERATION FOR CATARACT.

Dr. Herman Knapp, New York, said that if one lives long enough he will get cataract. He has never seen a patient who.

after having attained the age of, say, 80, did not have a cataract. Only a very small proportion, however, of these cases come to operation. The capsule is the most unpleasant feature in cataract operations, and should be removed with the cataract. Since he has been doing flap extraction he has not had a case of sympathetic ophthalmia. He described his own technic of the operation, and referred to some of the accidents and complications met with in cataract extraction.

SOME OF THE ACCIDENTS AND COMPLICATIONS MET WITH IN
CATARACT EXTRACTION.

Dr. D. W. Greene, Dayton, Ohio, gave a brief review of the history of the operation, showing the evolution through which the different stages have passed from Petit, 1706; Daviel, 1745, to the present time. The shifting of the section forward was now accomplished until it was made entirely corneal. He referred to the smaller iridectomy or its entire omission, and described the different methods of opening the capsule and delivering the lens and cortical debris. Reference was made to the so-called toilet of the operation. He said the combined operation was usually made. He spoke of the accidents in and what were complications of the operation. A strict definition of each was difficult. He outlined the management of a normal case, also the management of accidents and complications. Accidents were usually operative. Complications might be present at the time of operation; they might result from accidents during operation, but, as a rule, were postoperative. Age as such was never a contraindication. The physical and mental conditions incident to it might be complications. He discussed the matter of when the lens was extracted within the capsule. Reference was made to the use of flannel bandages, lint and cotton compresses in the treatment. Confinement in bed was not rigidly enforced after the second day. All of the things mentioned were intended to lead up to and make clear the title of the paper and the subjects treated under it.

Discussion.—Dr. John E. Weeks, New York, said in operating for cataract the incision should be made in the vascular portion of the eye, that is, at the limbus, and perhaps making a conjunctival flap. He now makes a conjunctival flap in all cases. He removes a portion of the capsule. The method of opening the capsule advocated by Knapp is a good one, but is not free from objection. The method recommended by von Graefe for opening the capsule is excellent. He prefers the combined operation rather than simple extraction.

Dr. Edward Jackson, Denver, has for several years practiced opening the capsule and demonstrated his method of doing it.

Dr. Alvin A. Hubbell, Buffalo, said the incision of Daviel is ideal except he (Hubbell) makes it upward instead of downward, almost at the corneo-scleral junction. The drawbacks of the simple operation are greatly in excess of those of the combined method. He prefers the combined operation. The capsule can be opened centrally. He favors the T-shaped incision of von Graefe, and spoke of the importance of irrigating the anterior chamber.

Dr. Eugene Smith, Detroit, said it is an easy matter to remove the anterior capsule in operating for cataract, and he has been doing this for several years—fifteen or twenty years. He prefers simple extraction in suitable cases: the combined operation in others. He advocates the use of capsule forceps.

Dr. Baker, Cleveland, added his testimony to the value of the peripheral capsulotomy of Knapp. He favors the combined method.

Dr. J. E. Willetts, Pittsburg, said the lens should be extracted as soon as possible and with the least interference with the eye. He favors simple extraction, as he gets better results. He thinks it is an ideal operation. He believes a preliminary iridectomy is unnecessary.

THE PINGUECULA AND PTERYGIUM.

Dr. Adolph Alt, of St. Louis, read a paper on this subject, which was illustrated with stereopticon slides. He reviewed the literature on this subject with special reference to the connection between the two affections from the standpoint of the pathologist, and said that it rehabilitates in some measure Arlt's marginal ulcer as a cause of pterygium.

THE MAMMALIAN EYE.

Dr. Casey A. Wood, Chicago, gave a talk on the mammalian eye, illustrated by colored slides prepared from original drawings by the artist, Mr. A. W. Head. This is the first time these fundus-pictures were ever presented or exhibited in America, and it is through the courtesy of Mr. Head that they were obtained.

FILARIA LOA.

Dr. Derrick T. Vail, of Cincinnati, Ohio, discussed the varieties of nematodes simulating filaria loa (eye worms): he described the parasite, its habitat, and mentioned the theories as to its development. He also spoke of the mode of infection and of the rarity of actual cases in this country. He reported a genuine case and exhibited specimens.

THE CILIARY PROCESSES IN ACCOMMODATION.

Dr. F. Park Lewis, of Buffalo, spoke of the importance of accommodation in relation to the eye itself and pointed out the difficulty of studying the problem from a physiological standpoint. He said that pathology interrupted its smooth working and made evident points otherwise obscure. Attention was directed to the inadequacy of the Helmholtz theory. The Tscherning's theory was more satisfactory, but was not explained by the mechanism. The relations and nature of the ciliary processes were discussed. Nature adapted an organism to existing necessities, but did not often vary fundamental principles. He described the ciliary processes in the pig, in the reptile, in the bird, in the fish, and in man, illustrated by a series of stereopticon slides.

The segmental action of the ciliary processes was necessary to explain visual correction of an astigmatic cornea. There was conjugate action of corresponding segments in one eye, or in both. He spoke of its importance in nutritive conditions of the lens and in sympathetic ophthalmia in correlated brain centers.

SPONTANEOUS HEMORRHAGE INTO THE VITREOUS.

Dr. Theodore B. Schneideman, of Philadelphia, stated that hemorrhages into the vitreous of traumatic origin were not very rare, but spontaneous hemorrhage was quite uncommon. The latter was dependent on changes in the walls of the blood vessels. Of constitutional affections responsible for such changes, tuberculosis, pernicious anemia, syphilis, malaria, were to be particularly mentioned. In older subjects atheroma occupied the first place. In the two cases the author reported the underlying cause was obscure. One occurred in a young man of 21, and the other in a neurotic woman about the time of the menopause.

CASES OF HEMORRHAGE FROM THE EYE.

Dr. Alvin A. Hubbell, of Buffalo, reported two cases of profuse hemorrhage from the eye. One was from the conjunctiva of a newborn infant after several instillations of a 2 per cent. solution of nitrate of silver, and the other from the eyeball of an adult whose cornea had become ulcerated and perforated in the course of a long-continued glaucoma.

Discussion.—Dr. W. L. Dayton, Lincoln, Neb., mentioned a case of retinitis albuminurica occurring in a young patient in whom there was extensive hemorrhage into the vitreous about the macular region. The peripheral portion of the retina could be distinctly seen.

Dr. F. Park Lewis thinks the cause of hemorrhage into the vitreous in some cases may be due, first, to some local degenerative condition of the vessels, and, second, to some irritative condition of sufficient intensity to cause the normal vessel to contract.

Dr. Percy Fridenberg, New York, narrated an interesting case of intraocular hemorrhage in connection with disorders of menstruation. In this case both retinæ became detached.

Dr. Edward J. Bernstein, Kalamazoo, Mich., reported a case of intraocular hemorrhages with fibrous bands in a boy of 14. The case progressed to complete disorganization of the eye.

Dr. Alvin A. Hubbell recalled four cases of recurrent hemorrhages into the vitreous. All of the patients were males. Two were young men of 22 or 23. The other two were men in middle life. In each case the hemorrhages occurred at irregular intervals, and the hemorrhages would absorb with very little destruction of vision. He has never seen a case of recurrent hemorrhage into the vitreous in a female. He has no explanation to offer as to the cause of these hemorrhages.

Dr. Geo. M. Gould, Philadelphia, referred to eye strain as a possible cause of hemorrhage into the vitreous. He has seen several cases of hemorrhage into the vitreous, or anterior portions of the eye which he relieved, and these were found to be due to eye strain.

Dr. H. B. Young, Burlington, Iowa, has seen in the past month a case of spontaneous hemorrhage into the vitreous in a man, 30 years of age, married, of good habits, but who for years has had chronic albuminuria. Young considers the connection between a vitreous hemorrhage and albuminuria a definite one. He has also seen a case of excessive subconjunctival hemorrhage in a man of 50 without any known cause.

Dr. L. A. W. Alleman, Brooklyn, New York, reported cases similar to those narrated by Gould.

Dr. Gould raised the point as to whether strong solutions of nitrate of silver may not cause these vitreous hemorrhages in some cases.

Dr. Adolph Alt, St. Louis, Mo., mentioned a case in which one drop of a 2 per cent. solution of nitrate of silver was dropped on the cornea, and in a few hours thereafter hemorrhage from the conjunctiva occurred which could not be controlled, so that the child died in a week or less from exhaustion and exsanguination.

Dr. John E. Weeks said that in the preparations of silver we have protargol and argyrol, which are efficient and harmless remedies. If argyrol is used in a strength of 35 per cent. solution, or protargol in a relatively strong per cent., the danger to the patient

would be *nil*, and the effect produced would be as good, in his opinion, as that to be obtained by the use of nitrate of silver.

ADVANTAGES AND DISADVANTAGES OF GLASSES IN RAILWAY
SERVICE.

Dr. Nelson Black of Milwaukee, Wis., gave a report of the opinion of ophthalmologists throughout the United States as to the safeness of an employe requiring the use of glasses. The advantages of, and objections to, the protection of the eyes of engineers and firemen by glasses were discussed. The question of allowing engineers who have been a long time in the service to wear glasses for constant use, when their vision has fallen below the required standard, but can be brought up to standard by lenses, has been receiving very serious consideration by railway officials. Many railroad companies allow their old engineers to run with glasses, requiring them to carry an extra pair. An opinion was asked as to the safety of such an engineer, and the following was given: "It is my opinion that a railroad employe (engineer or fireman), who has been in continued service for a period of not less than five years, and who on re-examination falls below the required standard of vision, and such vision can be brought up to said required standard with glasses, his color perception meeting the required standard and there being no ocular disease, is a safe employe. Such employe should be required to carry at least one extra pair of glasses. He should also be re-examined semiannually to ascertain if there has been a further decrease in vision, and if the glasses fully correct the visual defect."

Dr. Sherman Vorhees, Elmira, New York, in opening the discussion, said the method of examination of railway applicants, as engineers, firemen, etc., as practiced, is faulty. He has examined a considerable number of men for the railway service, and after an examination has been conducted by a railway official, not an oculist, he has found men have been accepted oftentimes who had only 20/40 vision in one eye. Railroad officials are not careful enough in their examinations of applicants. He agrees with Black that these examinations should be conducted by a trained oculist, and that all applicants should be examined under a mydriatic, and if they are found to have latent eye strain they should be rejected. It is an injustice, however, to men who have been long in the railway service that because they have only 20/40 vision their services are no longer required. They are safe employes; but a man is not a safe employe if his vision falls below 20/40 or 20/50.

While it is hard to reject men with such vision, the safety of the public demands that they shall not continue in the service.

As to amber glasses, they are excellent on bright days, but he considers them a hindrance at night.

Dr. Parker, Detroit, Mich., represented the Michigan Central Railroad at a conference held in New York. The object of the meeting was to determine some standard for vision, hearing and color sense. No difficulty was experienced in disposing of the color-sense question. Dr. Black's paper was used as a guide at that conference, and he was considered an authority, but he (Black) did not specify in his paper the amount of vision an applicant should have and still be retained in the railway service with glasses. It was determined that the applicant should have vision of not less than 20/40 combined, or not less than 20/50 in either eye.

Dr. H. V. Würdemann, Milwaukee, Wis., asked whether we can get enough safe young men with inclinations toward railroading, who have standard or normal eyes, who will not, when 40 or 50 years of age, be obliged to wear glasses in order to see distinctly in the distance. He answered that we can not. Only approximately 10 per cent. of people have nearly emmetropic, standard or normal eyes. If one of these men of 40 or 50 years of age loses his glasses, if he has fair vision, he is not incapacitated from running an engine or train until he gets to the end of the line.

As regards amber glasses, they are of great benefit, but at night they fall into the same category as glasses for correcting errors of refraction. A person will see worse in the dusk or dark with amber glasses.

Dr. Edward Jackson, Denver, agreed with Würdemann that railroad companies can not get men enough with emmetropic eyes to supply the demand for trainmen. If these companies get men with emmetropic eyes at 20, a large proportion of them in time will become sufficiently hypermetropic to require convex lenses to give normal vision.

Dr. Edward B. Heckel, Pittsburg, Pa., expressed his surprise that amber glasses are not more commonly used. As to seeing better in the dark without glasses, this question has been asked him several hundreds of times, and the explanation he has given to patients is that the more intense the light, the more essential it is for the image to be as perfect as possible.

Dr. Francis Valk, New York, said employes who have been long in the service should be permitted to wear glasses on account of slightly defective vision. They should not be rejected on this account. But what is to be done with the men who are coming into

the railway service? These should be carefully examined before they are accepted as reliable railroad employes.

Dr. H. B. Young, Burlington, Iowa, said he was the original investigator of this subject, and covered practically the same ground in a paper he presented before the Chicago Ophthalmological Society two years ago, and which was published in the *Annals of Ophthalmology*, St. Louis, January, 1904. All of the points discussed to-day were embodied and emphasized in that paper, with the exception of the point in regard to the wearing of amber glasses. With the managers of railroads oculists have difficulty in overcoming the prejudice against men being put on engines with the use of glasses. Investigations made by him some four years ago demonstrated conclusively that a man with 20/50 vision is capable of seeing any signal which he will be called upon to see at a safe distance, granting that his train is running at the rate of sixty miles an hour.

Dr. Lucien Howe, Buffalo, New York, said that no matter what standard of vision oculists make, no matter what they think about it, the American Railway Association is going to do just what it pleases. A year ago he presented a carefully compiled report as to vision for railway employes, but the report was turned down by this association. He thinks it is utterly useless for ophthalmologists to establish a standard and expect the railroad companies to conform to it. The standard should be as lax as possible, and then gradually raised or improved.

Dr. Derrick T. Vail, Cincinnati, Ohio, said it is likewise useless and folly for the officials to formulate any definite rules for their employes to follow in reference to wearing glasses, for the reason that the employes will put on glasses if they are required to do so, and take them off when they are out of the yard and are on the run.

FIXATION OF EXTERNAL RECTUS MUSCLE IN NYSTAGMUS AND PARALYSIS.

Dr. J. Elliott Colburn of Chicago read a paper on the subject in which he reported a case of nystagmus, a case of paralysis of the right internus, and a case of motor paralysis of the third nerve.

OCULAR ORIGIN OF MIGRAINE.

Dr. Geo. M. Gould, Philadelphia, referred to the vague and hazy ideas existing in the minds of practitioners as regards migraine. He expressed a preference for the use of the word sick headache. No two cases are exactly alike. He furnished abundant and unassailable evidence that the vast majority of cases of sick headache

are largely, if not entirely, due to eye strain, and he has afforded relief to a large number of sufferers by prescribing properly fitting glasses.

Discussion.—Dr. Edward B. Heckel, in speaking of the relations of the neurologist to the ophthalmologist, said the neurologist is too prone to criticize the oculist for not turning over cases of migraine to him, as he (the neurologist) thinks he is the only one who is competent to treat such cases. The neurologist does not hesitate to treat any case of this kind included under the head of migraine without having any knowledge of the functional activity of the patient's eyes. He considers this a great mistake. He believes it is the duty of the neurologist to familiarize himself with the functionation of his patient's eyes before he attempts to institute treatment, and this can only be done, in his judgment, by an ophthalmologist.

Dr. Francis Valk, New York, said only a short time ago, in talking with a prominent neurologist, he asked him if he did not believe that some cases of migraine were due to eye strain. The neurologist replied, "Yes, when there is eye strain." He then said to the neurologist, "Who is to settle that question, the neurologist or the oculist?" The neurologist turned away without answering it. It seems to the speaker that any fair-minded man would have acknowledged that the oculist is the one to settle the question of whether the migraine is due to eye strain, to a refractive or muscular error. Dr. Valk related a case occurring in the practice of this man. The patient was stupefied by morphin, for the reason that the cause of the patient's migraine was not found out. The patient subsequently consulted Dr. Valk, and in examining him carefully he found exophoria, which was relieved, since which the patient has had no further attacks of migraine.

Dr. H. V. Würdemann has followed Gould's writings on this subject with a great deal of interest and pleasure. Many of his points are well taken. We have all seen cures of migraine or sick headache wrought by the correction of errors of refraction and by other means directed towards the relief of troubles that were denominated as eye strain. While Dr. Gould's statements were true, they are exaggerated, in that not all cases of megrim are due to eye strain. Megrim may be cured by the correction of an error of refraction when there is eye strain. The speaker is the subject of this form of trouble himself. His refraction has probably been corrected. His ocular muscles are in good condition. He has full or better than normal visual acuity; but about two attacks of migraine, with fugacious amaurosis and hemianopsia are his lot in the

course of the year. What is the cause of these attacks? He firmly believes that his attacks are due to overwork, coupled with defective elimination of uric acid and the other products that ought to be carried out of the system.

Dr. Lucien Howe said that lots of cases of migraine are curable without glasses, simply by prescribing outdoor life. It is not the experience of one man which will settle this question, but the aggregate experience of the profession.

Dr. Baker, Cleveland, Ohio, said every oculist has cured hundreds of cases of migraine with glasses. This is done daily. It is a part of the work of the oculist. It is only now and then that an exceptional case fails to improve with the fitting of glasses. He had migraine all his life until he used glasses. His grandfather, his father, brother and sisters, uncles and aunts all had it, and were cured by glasses. Many members of the profession forget that the normal eye may be strained by overwork, and hence be the cause of migraine.

Dr. Stevens, Akron, Ohio, has had some cases of migraine which he has not been able to relieve by fitting glasses, but he probably relieves 90 per cent. of his cases by prescribing glasses. There are cases that require other treatment than fitting of glasses.

Dr. Andrew Timberman said that in cases of migraine the oculist should be persistent in looking for eye strain. He has, at times, almost given up searching for the cause in certain cases, but by perseverance has found migraine to be due to eye strain. However, he does not believe all cases are correctible by prescribing glasses.

Dr. John E. Weeks said he is convinced that the vast majority of cases of sick headache are due to eye strain, but looks with suspicion on a man who states, without any reservation, that every case is due to eye strain. Prescribing glasses for the correction of an error of refraction, also for the correction of any muscular error that may be present, does not relieve all of the cases of sick headache. It is because in many of the cases oculists do not consider the fact that the patient is using his eyes just as he wishes to use them without regard to their limitation. Many cases of migraine that otherwise would be cured are not cured simply because that feature is overlooked.

Inasmuch as the term migraine is not accurately defined, the speaker agrees with Gould that it should be done away with, and we should simply say the patient has headache or sick headache.

Dr. W. J. Means, Columbus, Ohio, has had an attack of migraine on an average of every twenty days for twenty years. His mother had migraine. Every one of his brothers and sisters have had it.

and it has continued until about the age of 50; then they got better. Migraine is not relieved, in his opinion, in all instances by fitting glasses. Sometimes a stomach tube relieves him.

Dr. H. B. Young has worn glasses for thirty-six years, yet every six weeks or so he has an attack of migraine. He is unable to lie down during the attack, but is obliged to stand until the worst part of the attack is over. But if he is careful he can knock it out by taking C. S. B. pills (calomel, strychnin and Belladonna), which can be had at any drug store.

Dr. Bommer, Dayton, Ohio, called attention to the fact that a great many physicians have errors of refraction, yet many of them never have sick headache. Therefore, is it not a fact that there is more than one factor which causes sick headache? Does not suggestion, coupled with glasses, very frequently have a decided effect in the cure of such patients?

Dr. Derrick T. Vail had never had a migrainous attack until two years ago, yet he has had an error of refraction all his life. Shortly before this he had an attack of colitis, accompanied by a slight diarrheic discharge. He has had two or three of the scintillating scotomas during these attacks. He has had his eyes carefully gone over, and the fault does not lie with them, but he believes that attack can be traced to the condition of his colon.

Dr. J. E. Colburn, Chicago, referred to the hereditary feature of migraine, saying that his father had it. The speaker never attended a term of school through without having an attack. He could not use his eyes for any length of time, particularly in the afternoon, without going to sleep, and thinks he never would have been able to have studied medicine if it had not been for the fact that at that time a large part of medical teaching was done by didactic lectures; he had a good memory and could remember what his teachers said.

RETINAL CHANGES AS AN AID TO DIAGNOSIS IN VASCULAR DEGENERATIONS.

Dr. Thomas A. Woodruff, Chicago, called attention to the slight anomalies that are recognized from time to time which show themselves in alterations in the caliber and contour of the retinal vessels. In some cases these changes may be so slight as to be overlooked. A very careful and closer study of the fundus will enable one to detect slight structural changes in the retinal vessels, which will lead him to form the conclusion that there is commencing degeneration of the arterial walls, also in the smaller arteries elsewhere in the body, signifying an arterio-capillary fibrosis. Tor-

tuosity of the vessels is not a positive sign unless it is confirmed by other variations from the normal, which are found in the early stages of arterial degeneration. These changes are readily recognized by an ophthalmoscopic examination in the early stages of arterial degeneration, and if appropriate treatment is promptly instituted the disease can be arrested and a favorable prognosis given.

THE TREATMENT OF RECENT EMBOLISM OF THE RETINAL ARTERIES BY DIGITAL MASSAGE.

Dr. H. V. Würdemann of Milwaukee gave abstracts of all the cases he could find in the literature, including four of his own, describing a method of treatment in detail. Two of his cases were completely cured, and two others benefited by the massage, as well as a number of cases reported in the literature. This treatment was strongly recommended by the author, as it yielded better results than any other form of treatment. In fact, other methods, unassisted by massage, were deemed of little use.

The papers of Drs. Woodruff and Würdemann were discussed together.

Dr. Casey A. Wood, speaking with reference to Dr. Woodruff's paper, said that Dr. Woodruff had introduced a subject which promised to be of great interest to ophthalmologists. In his judgment, many members of the profession have not taken advantage of the fact that in the back part of the eye there are blood vessels and membranes in which minute changes that have taken place can be readily seen. Very little, if any, advance has been made in the last five or six years in determining visible changes in these membranes, vessels and nerve heads, and very little has been done toward instructing and assisting the general practitioner in the diagnosis of systemic infection in this class of cases. This is a large field, and there is much to be done. The observations of Dr. Woodruff might be extended. He believes it is the duty of every man, when he can associate a definite change, however minute it may be, in the retina or in its vessels with some well-defined systemic condition, to publish such cases. In the course of years, by more careful examinations of the fundus—although he would not rely on this alone—considerable light may be thrown upon the changes that take place in various parts of the body. The cases he has investigated have borne out the contention of Dr. Woodruff. However, a larger number of observations need to be made; they ought to be more definite than a mere reference to sclerotic changes or other indefinite terms that are sometimes applied.

Dr. Blau said, regarding the question of embolism, he does not doubt the diagnostic ability of Dr. Würdemann, but he doubts whether those changes which are observed by the ophthalmoscope are embolism. Embolism can not be diagnosticated, in his judgment, with the ophthalmoscope, but with the aid of the microscope. Cases that have been diagnosticated as embolism have been found on careful examination to be arterio-sclerotic changes or affections of the optic nerve. If true embolism of the retinal artery exists, nothing can be done by treatment.

Dr. Herman Knapp said there are cases in which the obstruction is due to endarteritis. In true embolism he has seen very little, if any improvement follow such measures as were mentioned.

Dr. Casey A. Wood, in discussing Dr. Würdemann's paper, said we have to deal with quite a number of different conditions in embolism. Dr. Knapp had indicated one of those conditions, namely, where the obstruction is due to an endarteritis, a roughening of the intima of the vessel, where a fibrinous clot is formed. That is quite different from so-called ulcerative endocarditis, where we have a plug carried from the heart or from some large vessel, infective in character, then lodging in the eye. Moreover, in a case of arterial degeneration, due to old age, we may have secondary embolism from a thrombosis which has occurred further down. The character of the plug may vary considerably in size. The place where an embolus lodges is of great importance. We can not speak of all cases of embolism as if they are alike, as they differ very materially.

With reference to treatment, if anything will do good, it is massage. His experience has been, however, that patients will not stand the very firm, deep pressure or massage which Fisher refers to in his monograph. A few such treatments will cause the eyeball to become tender, and if such treatment is carried out the first or second time, patients will not permit it the third or fourth time. This has been Dr. Wood's experience with his own patients. He would suggest, therefore, that this massage be given oftener, but not carried out with such firm, deep pressure as advocated by Dr. Würdemann.

Dr. Würdemann, in closing the discussion, said the criticism may well be made as to whether we can relieve a case of true embolism of the retinal artery by massage. If we can partially dislodge a clot, whether it comes from the heart, or a secondary clot in another vessel, by deep, firm massage *in situ*, then we are accomplishing some good, and the only way this can be done is by mechanical treatment. He has seen a clot in a vessel followed by

endarteritis, and such a case has not recovered. Scotoma has formed and remained there, and there has been a blind spot in the visual field.

DEXTROPHORIA.

Dr. Francis Valk of New York said that this condition was found in the examination of the field of vision with the tropometer. It showed a tendency for the visual lines to turn to the right or left under the influence of the direct innervation of the muscles. It had probably an anatomical cause. It was found associated with esophoria and exophoria, and in the operative correction of all cases of lateral imbalance was a useful indication of the necessary procedure.

ADVANCEMENT OPERATION VERSUS TENOTOMY.

Dr. Edward J. Bernstein, Kalamazoo, Mich., assumed that the position of Landolt was correct, that tenotomy of the recti was unjustifiable except under rare conditions, as it substituted two weak muscles for one normal and the relatively weak one, thereby producing insufficiency in amplitude in both lateral directions. The technic of the operation was the Weeks' advancement. With this operation the author corrected not alone actual strabismus, but also muscular insufficiencies which were not amenable to non-surgical means.

CLINICAL MEASUREMENT OF TORSION.

Dr. Lucien Howe, Buffalo, pointed out the difference between torsion with convergence and torsion with parallel axes. He described the earlier methods of measuring torsion with convergence, and pointed out the objections to these. The author had devised three instruments for this purpose, which were exhibited and demonstrated. He discussed the results of measurements and their clinical value.

ELECTRIC OPHTHALMIA.

Dr. Edward N. Heekel, Pittsburg, Pa., reported a case the result of exposure to an electric arc with a general erythema of the lids and face, which was followed by desquamation and a large, gradually diminishing, central scotoma.

FALLACIES IN OPHTHALMOLOGY.

Dr. Joseph E. Willetts, Pittsburg, read a paper with this title in which he spoke of the perpetuation of obsolete theories and conditions that are set forth in our modern text-books.

RELATIONS BETWEEN MEDICAL PRACTITIONERS AND EYE SPECIALISTS.

Dr. James A. Spalding of Portland, Maine, said that many medical men would sign petitions to legalize opticians as scientific fitters of lenses, send patients with diseased eyes and foreign bodies in them to opticians, consult opticians for diseases of their own eyes, and fitting of lenses, and send friends and patients to opticians even when in their own town resided educated medical men who had specialized in diseases of the eyes. The reasons for this were thoughtlessness, jealousy, belittlement of the skill demanded in fitting lenses, desire to have the optician and family as patients, irritation at the large fees demanded by oculists, and the belief that the specialty was overrated, and that many of its practitioners were undereducated.

Specialists must deserve recommendations from practitioners. They must be well educated and ethical men. No one could be a good specialist in six weeks. If well-educated specialists should fail in proper medical support, they could gain no living in competition with hospitals, which took the operations and opticians who advertised for and got the refractive cases in a vast majority of towns and cities in the land. Just as physicians organize, so specialists should organize, and as an organization publish under the auspices of their publication committee papers on diseases of the eye. They should teach that eyes with imperfect sight were diseased eyes, and needed proper treatment at the hands of medical specialists in the way of proper lenses. They should issue their own set of test types, and hang them in every school. They should send a representative into every normal school to test the eyesight of the pupil teachers and lecture before those future teachers about the eye. They should keep in touch with the colleges and their students, some member following each class through its four years of college life. They should furnish to medical practitioners a fee table, for people of moderate means who wish to know the cost beforehand. They should refuse to buy lenses of opticians who make it a rule to fit lenses. Or, better still, they should furnish their own lenses just as hosts of medical practitioners prescribe their own medicines, and so hold on to their patients and their means of living.

THE TEACHING OF OPHTHALMOLOGY IN UNDERGRADUATE MEDICAL SCHOOLS.

Dr. L. A. W. Alleman of Brooklyn, N. Y., contributed a paper on this subject, in which he said the medical profession, in its

tight to preserve life, might well learn from the experience of the profession which aimed at the destruction. Special knowledge offered much aid to the general practitioner, while the efforts of the specialist were often futile without the assistance of general medication. The specialist or the general practitioner who failed to recognize the correlation of all parts of the economy became dangerous. Ophthalmology should, therefore, be taught as a necessary part of a medical education, and not as a specialty. The longer college course had not given proportionate increase in the time devoted to the so-called specialties, nor as to the time of each. Personally, he did not attempt to cover the entire field of ophthalmology. He did not advise the student to learn to use the ophthalmoscope, and he felt reasonably successful, if at graduation his student had learned to recognize the cases which he might safely and properly treat, and those which were of so serious a nature as to at once require the assistance of the specialist. The points which he strove to impress upon the student were the assistance that he might expect from an examination of the eye in forming a general diagnosis; also the necessity of recognizing ocular disorders as a factor in the causation of general disease—the systemic causation of many diseases of the eye.

THE MECHANISM OF ACCOMMODATION AND ASTIGMATIC ACCOMMODATION.

Dr. Edward Jackson of Denver, Colo., said that recent physiologic examinations had shown that the increased refraction of the crystalline lens during accommodation accompanied relaxation of its suspensory ligament, but that the lens did not at this time become more spherical. Skiascopy also showed that increased lenticulus attended accommodation, and that each lens presented its individual peculiarities of aberration and astigmatism. When freed from the tension of its capsule it tended to assume a shape determined by the development of the lens fibers, and on these might depend astigmatic accommodation.

Dr. John E. Weeks, New York, read a paper on "Diabetic Myopia," in which he reported a case, referred to the origin of the term, gave a concise account of the cases found in the literature, and spoke of the amplitude of the change in refraction.

INTERSTITIAL KERATITIS.

Dr. Thomas Faith, Chicago, read a paper on this subject, in which he reported cases, and called attention to the failure to mention the exciting causes in the current text-books and current

periodical literature. The localization of general conditions by traumatism is now a recognized clinical fact. Circumscribed parenchymatous keratitis is now admitted to be caused by trauma. Attention was called to the pathologic similarity of diffuse and circumscribed parenchymatous keratitis.

DENDRITIC KERATITIS.

Dr. Geo. F. Keiper, Lafayette, Ind., discussed the bacteriology of this affection. He cited a case from which the cultures were made, described the bacteria found, and pointed out the characteristics of growth in different culture media.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

John Tweedy, P.R.C.S., President, in the Chair.

Friday, July 7, 1905.

Mr. R. R. Cruise described a case of microphthalmic cyst of the orbit. The patient, aged 24, from birth had had a swelling in her left orbit which had been increasing in size for the last two years. There was a small, degenerated-looking microphthalmic eye pushed into the upper and outer quadrant of the left orbit. The rest was filled with a fleshy mass, which was firm and fluctuating. There was a coloboma of the iris, lens and choroid in the right eye. The left orbital content, which was cystic, was removed. On examination the sclerotic was deficient in its posterior half and through this the retina protruded into the cyst. The iris was adherent to the cornea in its whole extent. The lens is displaced backwards and held in position by a strong band of fibrous tissue attached partly to the globe and partly to the cyst. The cyst enveloped the globe above, below, and to the na-al side. The microscopic characters and peculiarities of the eye were carefully described and showed various developmental peculiarities, while the choroid had some fine bone developed in it. Clinically the diagnosis was by no means easy, especially the differential diagnosis between it and meningocele. Pathologically the chief peculiarity was the free communication between the eyeball and the cyst, which allowed the free passage of fluid secreted by the well-developed ciliary body to pass into the cyst, and this led to the increase in size of the cyst, for which reason the patient applied for treatment.

Mr. Simeon Snell, Sheffield, gave details of a case of sympathetic ophthalmitis in which normal vision was restored in the exciting

and sympathizing eye. The patient was a man aged 38, whose left eye was wounded on Sept. 8, 1904, and when seen for the first time, eleven days later, there was a wound of the cornea extending into the ciliary region, with a prolapse of the iris. The prolapse was at once excised and the eye healed without further trouble.

On October 2 the right eye was noticed to be red, and five days later there was iritis, and it was then noted as being a severe case of sympathetic ophthalmia. About a month later the pupil began to act and the eye to whiten. Since then recovery has been perfect and vision is now 6/5 and J1 in each eye. Mr. Snell referred to another similar though less severe case which he had recorded in the Transactions for 1883.

Mr. Snell recorded also three cases in which sympathetic ophthalmitis had come on after excision of the eyeball. The first was a boy aged 10, who had a large wound of the cornea and sclera. Sixteen days later the eye was removed. Three weeks later there was sympathetic ophthalmitis. The disease ran a severe course, and the patient can now, 15 months after the accident, find his way about and read large print.

Another case was a man, aged 36, whose eye was wounded by a kick which involved the corneo-scleral junction. Sixteen days later the eye was excised. A month later Mr. Snell saw him for the first time, when there was marked sympathetic ophthalmitis in the other eye, which had commenced a week before. It was a severe case and practical blindness resulted. He also referred to another case, that of a girl aged about 10; the dates, however, could not be given. He referred to a case he published in the Transactions for 1882, in which the disease showed itself 32 days after excision and 106 days after the injury. Thus, of those four cases one was mild and recovered, three were severe and two of them were totally blind.

The report of the society's committee stated that such instances were of a mild form and that out of 30 cases 18 completely recovered, 3 partially and 9 were lost.

Mr. Snell also reported a case of a further instance of glioma in more than one member of the same family. He referred to the paper he read before the society last year, in which he related an instance in which two members of the same family were affected. At that time only three observers had placed cases on record. He now related a further case. The patient was a male child aged $2\frac{1}{4}$ years and glioma was present in each eye. One eye had been noticed affected a few months after birth and the

other a few months ago. It was then ascertained that the only other child of the parents was a girl, born in 1897, who was similarly affected with glioma of both eyes, which proved fatal. Mr. Snell mentioned the fact that the child whose cases he had recorded last year was still alive and well.

Mr. Mayou read a paper on "Secondary Tuberculosis of the Iris, with Spontaneous Rupture of the Lens Capsule." The patient was a boy aged 3, who for some time previously had suffered from tubercular dactylitis. The eye was inflamed for three weeks before being seen. Masses of tubercle were then seen on the iris, which was very much inflamed. Hemorrhage took place later on into the anterior chamber and the eye was removed. On examination it was found that the iris was adherent to the posterior surface of the cornea and Descemet's membrane was perforated, while the substantia propria was infiltrated. The mass on the upper part of the iris was adherent to the cornea and to the anterior and posterior part of the lens capsule and contained giant cells, but no epithelial cells or tubercle bacilli were seen. The anterior capsule showed a large gap, evidently produced by the softening of the tubercle, followed by cicatricial contraction. The retina also showed masses of round-cell infiltration similar to that seen on the iris. The chief points of interest were the unusual situation at which the tubercular mass had invaded the cornea; the spontaneous rupture of the lens capsule, the nature of the exudation in the retina, and the general tendency toward cicatrization.

Notes and News.

SCHUBERT.—In Nürnberg, Hofrat Dr. Schubert, a former pupil of Hermann Cohn, died, aged 56 years. He was particularly noted for his work along the lines of school hygiene.

DR. R. A. REEVE, dean of the medical faculty of the University of Toronto, has been chosen president of the British Medical Association, which will hold its next meeting in Toronto, in August, 1906.

A NEW MEDICAL SCHOOL under the name of the Atlanta School of Medicine opened at Atlanta, Ga., October 3. Drs. James M. Crawford, Robert B. Ridley, Jr., and James H. Crawford have charge of the eye, ear, nose and throat department.

HESS.—In Mainz, on the 27th day of August, Dr. Wilhelm Hess died at the age of 75 years. He was one of the organizers of the *Heidelberger Ophthalmologischer Gesellschaft* and a close friend of Albrecht v. Graefe, with whom he was associated in establishing the *Deutsche Ophthalmologische Gesellschaft*.

SCHWEIGGER.—After a long, severe illness, which caused almost complete paralysis, Prof. Dr. Schweigger died in Berlin at the age of 72 years. In his early career he was assistant to Albrecht v. Graefe and followed him as director of the University Eye Clinic in Berlin. He was associated for many years with Dr. Herman Knapp on the *Archiv. für Augenheilkunde*. He also held office in the *Heidelberger Versammlungen* until his approaching illness caused him to resign.

FEAR AN EYE EPIDEMIC.—Several eye specialists declare that ophthalmia will follow the Mardi Gras carnival at Coney Island. Influence was brought to bear on the carnival committee which resulted in posters being freely displayed about Coney Island to warn confetti throwers that any person who gathers the torn bits of paper from the pavement and throws them at another person will be arrested and, if found guilty, will be punished by either a

fine of \$100 or six months' imprisonment. Physicians have treated several cases of iritis at the Coney Island Reception Hospital which have resulted directly from throwing confetti.—*Jour. A. M. A.*

WE REGRET to announce the death of Dr. Frank Buller, of Montreal, which took place last week in that city, after an illness lasting about five months. Dr. Buller had a world-wide reputation as an ophthalmologist. Since 1883 he held the chair of ophthalmology and otology in McGill University. He was a member of the American Ophthalmological Society and of the Ophthalmological Society of the United Kingdom. Dr. Buller was 61 years of age, having been born at Campbellford, Ontario. He graduated in medicine in 1869 from Victoria College, Cobourg, and then went abroad, devoting his time to the study of the eye, ear and throat, in England and Germany. A portion of this time was spent as assistant surgeon in the Franco-Prussian war, having been attached to the military hospitals of North Germany. For several years he was senior house surgeon to the Royal London Ophthalmic Hospital. In 1876 Dr. Buller settled in Montreal, where he soon built up a large and lucrative practice. For seventeen years he held the posts of ophthalmic and aural surgeon to the Montreal General Hospital and more recently the same position with the Royal Victoria Hospital of Montreal.

The following is a list of the most recent works on ophthalmology :

DISEASES OF THE RETINAL VESSELS. By DR. OLE BULL. Publishers, Veit & Co., Leipsig. Price, 24 marks.

DISEASES OF THE EYE. By SCHMIDT-RIMPLER. 2nd Edition. Price, 15 k. 20 h. Publisher, Alfred Hölder, Vienna.

THE THEORY OF SKIASCOPY. By DR. HUGO WOLFF, Berlin. 28 Pages; 2 Illustrations. Published by S. Karger, 15 Karl Strasse, Berlin.

OPHTHALMOSCOPIC GUIDE. By DR. FRITZ SALZER, Privatdocent, Munich. 107 Pp. Price, 5 Marks. Publisher, J. F. Lehmann, Munich.

COLLECTION OF OLD OPHTHALMIC AUTHORS. By DOCTOR P. POINSIER, Paris. Price, 5 Francs. Publisher J. B. Ballière & Sons, Paris.

OCULAR AFFECTIONS IN DISEASES OF WOMEN. By DOCTORS E. BERGER and ROBERT LOEWY, Paris. 232 Pages. Price, 3 Francs. Publisher, Félix Olean, Paris.

ON THE RELATIONS OF THE VISUAL ORGANS TO JUVENILE FEEBLE-MINDEDNESS. By DR. TH. GELPKE, Karlsruhe. Price, 0.80 Marks. Publisher, Carl Marhold, Halle.

INTRODUCTION TO MEDICAL OPTICS. By DR. A. GLEICHEN, Berlin, Privatdocent. 276 Pp., 102 Illustrations. Price, 7 Marks. Publisher, William Engelmann, Leipsig.

PATHOLOGY AND THERAPY OF THE LENS SYSTEM. By PROF. C. HESS, Würzburg. Second, Entirely New, Edition. Price, 10 Marks. Publisher, Wm. Engelmann, Leipsig.

THE SURGICAL TREATMENT OF DISTURBANCES OF MOTILITY OF THE EYES. By E. LANDOLT, Paris. Second, Entirely New, Edition. Price, 2 Marks. Publisher, Wm. Engelmann, Leipsig.

THE EFFECTS OF TROPICAL LIGHT ON WHITE MEN. By MAJOR CHARLES E. WOODRUFF, A.M., M.D., Surgeon, U. S. A. 358 Pages. Price, Cloth, \$2.50 Net. Publisher, The Rebman Co., New York.

SQUINT OCCURRING IN CHILDREN. By EDGAR A. BROWN, F.R.C.S., Assisted by Edgar Stevenson, M.D., M.Ch., Aberd. An Essay. Price, \$1.00. Publishers, Bailliere, Tindall & Co., London.

OCULAR THERAPEUTICS. By SIDNEY STEPHENSON, M.B., C.M. Lectures Delivered at the Polyclinic, London, June, 1905. Publishers, Bailliere, Tindall and Cox, 8 Henrietta St., Covent Garden, London.

SYPHILIS OF THE EYE AND ITS ANNEXES. By DR. F. TERRIEN, formerly Chief of the Ophthalmic Clinic of the Faculty of Paris. 316 Pages, 39 Figures, 3 Plates. Price, 4 Francs. Publisher, G. Steinheil, Paris.

THE OPHTHALMIC YEAR-BOOK FOR 1905. By EDWARD JACKSON, A.M., M.D., Denver, and GEO. E. DE SCHWEINITZ, A.M., M.D., Philadelphia. Publisher, The Herrick Book and Stationery Co., Denver, Colo.

TRACHOMA. By DR. J. BOLDT. Translated by J. Herbert Parsons, D.Sc., F.R.C.S., and Thomas Snowball, M.B., C.M. With an Introductory Chapter by E. Treacher Collins, F.R.C.S. Price, \$1.00. Publishers, Hodder & Stoughton, London.

KROENLEIN'S OPERATION. By DR. JOSEPH HELBRON, Privatdocent in the University and First Assistant in the Eye Clinic in

the University of Berlin. Two Plates, 88 Pages. Published by S. Karger, 15 Karl Strasse, Berlin. Price, 3.50 marks.

ÆTIOLOGIC AND SYMPTOMATOLOGIC MIGRAINE. Inaugural Dissertation Zur Erlangung der Doktorwürde in der Medizin, Chirurgie und Geburtshilfen der Hohen Medizinischen Fakultät der Universität Leipzig. HANS MÜLLER, Leipzig. Assistenzarzt in Königlich Sächsischen, 1 (Leib.) Grenadier-Regiment No. 100.

THE ATLAS OF HUMAN ANATOMY. By CARL TOLDT, M.D.: Professor of Anatomy in the University of Vienna, Assisted by PROF. ALVIS DALLA ROSA, M.D. Translated from the Third German Edition by M. Eden Paul, M.D., Brus., M.R.C.S., L.R.C.P. Sixth Section, Neurology and the Organs of Special Sense. Per Volume, \$4.75. Publisher, Rebman, London.

THE EYE; ITS REFRACTION AND DISEASES. Vol ii. The Diseases of and Operations on the Eyeball and its Adnexa. By EDWARD E. GIBBONS, M.D., Assistant Surgeon of the Presbyterian Eye, Ear and Throat Hospital; Demonstrator and Chief of Clinic of Eye and Ear Diseases in University of Maryland, Baltimore. Publishers, The MacMillan Co., New York. Price, \$5.00.

OPHTHALMIC NEURO-MYOLOGY. A Study of the Normal and Abnormal Actions of the Ocular Muscles from the Brain Side of the Question. By G. C. SAVAGE, M.D., Professor of Ophthalmology in the Medical Department of Vanderbilt University. 221 pages; 39 full-page plates and 12 Illustrative Figures. Price, cloth, \$2.00. Publisher, The Author, 137 Eighth Ave., Nashville, Tenn.

THE NEUROLOGY OF VISION. The Arts and Gale Lectures. By J. HERBERT PARSONS, B.S., D.Sc., F.R.C.S., Assistant Ophthalmic Surgeon, University College Hospital; Curator, Royal London Ophthalmic Hospital; Lecturer on Physiologic Optics, University College, London; Arris and Gale Lecturer R.C.S. (1904). 70 Pages. Publisher, Hodder and Stoughton, 27 Paternoster Row, London.

THE CONJUNCTIVA IN HEALTH AND DISEASE. By N. BISHOP HARMAN, M.A., M.B., Cantab., F.R.C.S., England; Ophthalmic Surgeon to the Belgrave Hospital for Children; Chief Clinical Assistant the Royal London Ophthalmic Hospital; Senior Ophthalmic Assistant the Middlesex Hospital. 292 Pages, 43 Original Illustrations. Price, Muslin, \$2.50 net. Publishers, Wm. Wood & Co., New York.

GRAEFKE-SÆMISCH HANDBUCH DER GESAMTEN AUGENHEILKUNDE. History of Ophthalmology. By PROF. J. HIRSCHBERG, Berlin. Pars 97, 98, 99. Publisher, William Engelmann, Leipzig.

ON BECOMING BLIND. By DR. ÉMILE JAVAL, Honorary Director of the Ophthalmic Laboratory of the École des Hautes Études; Member of the Academy of Medicine. Translated by Dr. Carroll E. Edson. Publisher, The MacMillan Company, New York. Price, \$1.25 net.

COLOR-VISION AND COLOR-BLINDNESS. A Practical Manual for Railroad Surgeons. By J. ELLIS JENNINGS, M.D. (University of Pennsylvania), formerly Clinical Assistant Royal London Ophthalmic Hospital; Professor of Diseases of the Eye, Medical Department Barnes University, St. Louis; Ophthalmic Surgeon to the Centenary Hospital; Ophthalmic and Aural Surgeon to the St. Louis and San Francisco Railway System, etc., etc. Second Edition. Thoroughly Revised with Illustrations. 132 Pages, Crown Octavo. Price, Extra Cloth, \$1.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, NOVEMBER, 1905. VOL. XIV. No. 11, NEW SERIES.

Original Articles.

ON THE CLINICAL IMPORTANCE OF THE DIPLOBACILLUS OF MORAX AND AXENFELD.¹

H. GIFFORD, M.D.

OMAHA, NEB.

(Illustrated.)

This germ has not received the attention in America which it deserves. With the exception of the report of Sweet¹ and an incidental mention by Dorland Smith,² no American work on the germ has been reported since my first paper on the subject, and in England it has merely been mentioned as one of the findings in work on the bacteriology of conjunctivitis. Not long ago one of the most experienced of the American ophthalmo-bacteriologists wrote to me that he had never seen a culture of the diplobacillus. Continued experience has convinced me, however, that after the pneumococcus and the white and yellow pus cocci, it is the most important germ, from a practical standpoint, that the ophthalmologist has to deal with. In the first paper in English on this germ³ I reported a serious ulceration of the cornea produced by it, and although I have not since then seen another ulcer of so grave a nature from this cause, I have seen several other cases of obstinate recurrent ulceration showing the diplobacillus in pure culture, the ulcers being small and near the periphery; beginning as infiltrations with comparatively little tendency to spread, but requiring frequent cauterizations with tri-chloroacetic acid and even the galvano-cautery before they could be checked. In Europe Axenfeld long ago reported a case of severe ulceration in connection with

1. Written for the Missouri Valley Medical Society meeting, Sept. 13, 1905.

1. Unpublished report to the College of Physicians, Philadelphia.

2. Abst. in Ophthalmology, July, 1905, page 665.

3. Annals of Ophthal., April, 1898.

the presence of the diplobacillus in the conjunctival sac, and more recently Paul,⁴ Erdman,⁵ and Schmidt⁶ have reported a number of diplobacillus ulcers of a serious character. In these cases while many of the ulcers were of a milder type than what is commonly known as serpent ulcer, in others the violence of the symptoms, the amount of hypopyon, etc., justified the clinical diagnosis of hypopyon keratitis, not to be distinguished except bacteriologically from that produced by the pneumococcus.

One reason for the neglect which the diplobacillus has labored under is the insignificant character of the symptoms which, in the majority of cases, it produces. In the typical diplobacillus catarrh there is only a moderate redness about the inner angle, while the subjective symptoms consist chiefly in an itching which many pa-

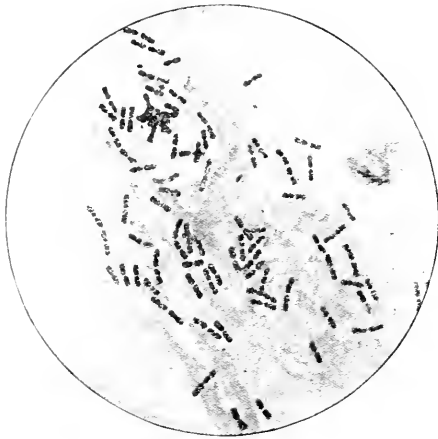


Fig. 1.—Diplobacillus of Morax-Axenfeld, x-1000. This shows the capsule unusually well.

tients bear with composure. The discharge is so scanty that the lids are not stuck together in the morning, and the bacteriologist is not especially tempted to investigate it. In fact, the appearances in the majority of cases that I see hardly suggest a specific infection of the conjunctiva, but rather a casual irritation. In quite a number of patients the eyes do not look inflamed at all, and the discharge is not in excess of that which one often sees in practically normal eyes; none at all being seen on a casual inspection, but on carefully examining the innermost angle of the palpebral fissure a speck of mucous no bigger than a pin's head can be discovered

4. Klin. Monatsblätter f. Augenheilkunde, xliii, page 154.

5. Klin. Monatsblätter f. Augenheilkunde, xliii, page 562.

6. Arch. f. Augenheilkunde, xlv, page 94.

which is often swarming with the diplobacilli. The subjective symptoms in such cases are often quite misleading, the sole complaint of some patients being that they can not read at night, and I must confess to having treated at least one case of this kind with glasses before discovering the real cause of the trouble. Beside the mildest form of diplobacillus catarrh there are two forms of the disease which without the aid of the microscope must frequently be called trachoma. One of these is the acute form, with rather profuse secretion and marked swelling and roughness of the retro-tarsal folds to which I referred some years ago; and a chronic form, in which the patient presents himself with a set of symptoms such that until one has been put on his guard, a snap diagnosis of chronic trachoma is almost sure to be made on first examination. The eyes are red and watery, half dry secretions cover the edges of the lids, and the retro-tarsal folds are moderately rough and red. The tarsi are, however, but slightly affected. This form I have chiefly met among the poorer class of Russian Jews and is apparently the product of dirt, neglect and slight eversion or closure of the lower tearpoints.

The exact diagnosis of the diplobacillus catarrh or corneal ulceration is of value both for the prognosis and the treatment. Virulent looking diplobacillus ulcers, if treated with zinc collyria, are less apt to spread rapidly, and less apt to need the use of the galvano-cautery than other serious ulcers. A diplobacillus conjunctivitis, on the other hand, is not infrequently exceedingly obstinate in yielding to any form of treatment. Some of these cases even when treated by a 2 per cent. solution of zinc chlorid applied to the everted lids for several weeks, will return with renewed symptoms and with the diplobacillus present in the discharges, within a short time after the treatment is stopped. (In some cases even when the microscope is used, the germ is found only after a careful search for it.)

In the matter of treatment, my early experience led me to recommend a treatment of chlorid of zinc, one grain to the ounce, with confidence; but the more obstinate cases which I have since met have obliged me to use a 2 per cent. solution applied to the everted lids and rinsed off; and latterly I have tried the collyrium of 1 per cent. zinc sulphate, so strongly recommended by the Germans and the French, without becoming certain that it is any more effective than the chlorid.

As the diplobacillus has been found in the nose by several observers some of the obstinate cases may be due to re-infection from

that organ. This would suggest treating the nose as well as the conjunctiva, a plan which I have not yet put into practice.

With regard to the morphology of this germ, it should be said that it can not be distinguished by the microscope from Petit's bacillus, a much rarer germ, first described as the cause of certain corneal ulcers, but which also may cause a mild conjunctivitis. So that while for practical purposes specimens showing a picture like the accompanying micro-photograph may be labelled "Morax," an exact diagnosis can only be made by cultures. Petit's germ grows quite freely on agar, also to some extent on gelatin, which it liquefies: while the Morax germ grows poorly or not at all on agar and not on gelatin. Both germs liquefy blood-serum, and lose the stain by Gram's method. It is worth noting that the existence of a capsule on the Morax-Axenfeld germ, for which I contended in my first paper, in opposition to Morax, Axenfeld and Peters, has also been maintained by Sweet, and is now, tacitly at least, admitted by Axenfeld. I say tacitly admitted since McNab,⁷ in describing work done at Axenfeld's clinic, says that both the Petit bacillus and that of Morax-Axenfeld show a capsule at times; and Axenfeld in an epilogue to this article takes no exception to the statement.

Since the foregoing was sent to the printer, I have seen the article of Stoewel,⁸ who, in commenting on the remark of Paul that the diplobacillus ulcer seems to be confined to circumscribed regions of Europe, inclines to the view that this effect of the diplobacillus is on the increase everywhere. During 1901 and 1902, the diplobacillus was found in 20 per cent. of all ulcers examined, while in the three succeeding years the percentage was 34 per cent. The idea that this germ has suddenly developed an increased affinity for the cornea hardly deserves consideration. It may well be, however, that the disproportionate increase in the population of the cities has increased the proportion of this type of ulcer in the clinics, both through increased opportunities for the spread of the diplobacillus conjunctivitis; and also by bringing in a lot of these milder ulcers which, in rural districts, would go unobserved or unidentified.

With regard to the identification of the Morax-Axenfeld germ, I ought to say that the accompanying microphotograph shows the capsule much more clearly than it can often be seen in the actual specimen, the plate being more sensitive than the eye for such details. Furthermore, in the matter of cultures, it should be noted

7. Klin. Monatsblätter f. Augenheilk., xiii, page 54.

8. Klin. Monatsbl. f. Aug., August, 1905, p. 142.

that Rochat⁹ has seen two serpent ulcers apparently caused by a diplo-bacillus differing both from the Morax and Petit germ in that it liquefies gelatin but *not* serum.

RECOVERY OF VISION IN A NON-SQUINTING AMBLY- OPIC EYE FOLLOWING INJURY TO ITS FELLOW.

LINN EMERSON, M.D.

ORANGE, N. J.

Several cases have been reported in which an amblyopic squinting eye has recovered normal vision after injury to the fixing eye.

In a recent paper Dr. W. B. Johnson cites three such cases to prove the existence of a *true* "amblyopia ex anopsia."

The failure to observe similar recoveries in non-squinting eyes is, no doubt, due to the fact that such cases have not come under an oculist's observation prior to the injury to the sound eye. In the case here reported it was my good fortune to investigate the patient's refractive condition about six weeks before the injury.

W. R. C., male, aged 11½, was referred to me by the family physician, April 4, 1905, with a history of severe headaches while in school. The ophthalmometer showed no astigmatism. Vision was 20/15 in the left eye and he accepted + 50 S. In the right eye vision was but 20/70 and was not improved by glasses.

As no apparent reason for this reduction in vision could be ascertained, a solution of atropin was given, with instructions to return after four days for a more careful examination, at which time

D. V. = 20/50 w + 1.25 S.

S. V. = 20/15 w + 1.00 S.

A most careful examination of the interior of the eye failed to explain the amblyopia. Patient was given D. + .75 S. S. + 50 S.

As no history of squint or of injury could be obtained, the opinion was given to the family that it was a congenital case, which would grow neither better nor worse.

On June 23, 1905, while indulging in a premature Fourth of July celebration, he put a fire cracker in a bottle which exploded in close proximity to his face. A long splinter of glass (which I did not see) pierced the left upper lid, perforating the globe at the corneoscleral margin, giving rise to considerable prolapse of the iris. The cornea was also cut in several places by smaller pieces of glass, but none of the other wounds were perforating.

9. Abst. in Klin. Monatsbl. f. Aug., April, 1905, p. 524.

Within two hours of the injury the prolapsed iris was excised and a proper dressing applied.

The distress of the family was augmented by the fact that the "good" eye was the injured one.

The case made satisfactory progress, and on July 17 the vision in the injured eye was 20/100. The patient then stated that his other eye had improved, and I was surprised to find vision 20 20—2. On July 31 it had risen to 20 20—1, and on September 8 D. V. = 20 20+. S. V. 20 40—.

ACUTE NON-TRAUMATIC UVEITIS.

REMARKS ON A SERIES OF SIX CASES.*

H. B. YOUNG, A.M., M.D.

BURLINGTON, IOWA.

Within the past two years I have seen in three persons six attacks of a distressing and unusual form of uveitis. I say "unusual" because in twenty-five years of practice I have never before seen anything like it, and in the literature at my command I have seen no account to fit it.

These three persons were all adults in otherwise supposedly good health; two women and one man—their ages 55, 40 and 30, respectively. The oldest had two attacks, the first in the left eye, 18 months later in the right. The next in age had it in the right only; and the youngest, three attacks, first in the left, five months later in the right, and three months later again in the right. The older woman is the mother of three healthy children, the youngest 21 years old, no miscarriage, and excepting a subinvolved uterus and feeble circulation (with slight systolic murmur) due probably to excessive adipose from lack of exercise, she has had no serious illness in twenty years. The younger woman, married three years, has never been pregnant. She is well nourished, fresh and youthful in appearance, and has never been seriously ill in her life. The man is a husky farmer, six feet tall, with average weight of 185 pounds, and but recently married. Of the three he is the only one with an unsatisfactory family history. One brother died of tuberculosis, and a sister of rheumatism of the progressive type, associated with joint deformities. The man himself was my patient 10 years ago for recurrent circumscribed bulbar conjunctivitis of that type in which we halt between phlyctenulosis and episcleritis,

* Read at the April, 1905, meeting of the Chicago Ophthalmological-Otological Society.

and which has recently been shown us as a tuberculide. Not until he had cod-liver oil, which seemed like "carrying coals to Newcastle," did he get permanent relief from this conjunctivitis. In all three, the uveitis, while differing in severity and one or two minor details, was the same in general character. I mean by this that it was the same in onset, general course, response to treatment and decline. It is not my purpose to report these cases in detail, but to speak generally of their features for comparison with recorded types.

THE ONSET.—Photophobia, congestion of the superficial and deep conjunctival vessels of the bulb, mostly at the equator; miosis; occasional darting, severe pains and sensations of a foreign body, and slight tenderness. Tension normal, iris bright and media clear. From such a beginning I did not in the first case anticipate the trouble which followed; and a colleague of experience, who visited me for a day and saw the man when he came back with his second attack, left me, I am sure, with the impression that I was borrowing trouble over it.

THE COURSE.—Within 48 hours the picture changed. Pain was more constant and severe; the "rosy zone" began to show up; the iris was less bright; the pupil, which had been tentatively and fully dilated with 1/100 atropin, while showing no synechia, could no longer be fully dilated when the atropin was used four times daily; and there was misty vision because of a vitreous haze. The cornea, while possibly lacking in lustre, had no punctate spots visible to the naked eye, nor was I able then or subsequently to be sure of them with the loup. In one case only, the woman with the one attack, was there any appearance of inflammatory exudate. This came first at the temporal margin of the pupil, which it nearly, but never entirely blocked; later at the periphery of the iris on the nasal side, a roundish spot about 2 mm. in diameter, creamy in color, but "spongy" rather than purulent in character. Vision sank to the mere perception of light. Floating or stationary opacities in the vitreous were not observed in any case. The haze was more or less dense according to the intensity of the inflammation and vision was also relatively obscured. Next in degree to the one just cited was ability to make out large objects at short distances. Pain was always a serious feature, and as might be expected was most pronounced in the women; but it is only fair to them to say that theirs were also the severer attacks of the disease. Salicylate of sodium in 30 and 40 grain doses, pushed to the point of constitutional symptoms, was absolutely useless as an anodyne; and when

hot bathing failed, recourse to opium became a necessity. Nor did the salicylate make any impression on the disease process itself.

DURATION.—No attack had less than two weeks of daily personal care, and the severer ones four or five weeks.

TREATMENT.—No progress was made in any case until mercury by inunction and K. I. internally was resorted to. The former vigorously applied for a week and the latter in doses from 20 grains up three times a day, continued until there seemed no need of it. When reasonable saturation was obtained, the pain abated; the congestion began to fade; the pupil increased in diameter, and vision improved. In no case was the pupil irregular in outline as in plastic iritis when atropin becomes effective. It should be mentioned, however, that at various times when the atropin was not carefully instilled, some filamentous synechiæ were observed. But except in the two eyes most severely inflamed these did not persist; and in these two but one spot held in each—both upward and back from the pupil edge.

RESULTS.—Recoveries were 100 per cent. Even the eye, whose vision sank to P. L. Quant., got 20/15 as before.

That the process was not in any sense plastic must be conceded; and that it began in the ciliary body, extended forward to the iris and backward to the choroid, seems as well established. But if it was serous in character, as seems probable, the reason for the departure from the typical form: Spots on Descemet's membrane, clouds in the vitreous, and a too easily dilated pupil, is not so clear. I may add that during this period I have also had two cases of the regular type who have done well under pilocarpin and cabinet bath diaphoresis.

ADDENDUM.

Since writing the above a seventh case may be reported. (August, 1905.) It differs in one particular only from the others. Atropin, if used in 1/200 solution more than once daily, caused marked increase of tension and pain; but pupil contracted and fine lines of adhesion formed without it. Saturation by mercury and iodid in about ten days, reduced tension, free large pupil, and uninterrupted convalescence, with complete recovery. Patient, a **man of 35** with good history.

FATAL SEPTICEMIA DUE TO OPHTHALMIA
NEONATORUM.

E. W. STEVENS, M.D.

DENVER, COLO.

On Feb. 4, 1905, I saw, with Dr. Alice Moore, of Denver, Colo., a well-developed male child, aged 3 days, with ophthalmia neonatorum.

The following history was obtained from Dr. Moore: The mother was a primipara, aged 19 years. Three months before delivery she applied for the treatment of a purulent vaginal discharge, with frequent and painful urination. A microscopic examination of the secretion was made by Dr. O. Lyons, and abundant gonococci found. The patient, being in great mental stress, took little interest in the cure of the gonorrhea and received practically no treatment for it. On the second day after birth the baby developed purulent ophthalmia. A microscopic examination of the discharge was made by Dr. Lyons, and numerous gonococci found. The ophthalmia was treated by the instillation, every three hours, of a 25 per cent. solution of argyrol and the cleansing of the conjunctiva every hour with boric-acid solution. The improvement in the ophthalmia was rapid and satisfactory. In twelve days the discharge of pus had ceased, the conjunctiva was smooth and corneæ clear. On February 14, when the ophthalmia was about well, the nurse in attendance first noticed redness and swelling of the second metacarpal articulation of the ring finger of the baby's right hand. On the next day the right knee was reddened and swollen. The temperature was 101° F. and the patient restless and apparently suffering severe pain. The limb was wrapped in gauze and kept wet with lead water and laudanum. Twenty-four hours later the left ankle joint became affected and the right knee and leg were much swollen. Temperature 103° F. The next day the little patient was much worse, temperature 104° F., the left elbow joint was swollen and endocarditis had set in. The left ankle was incised to the periosteum and a small amount of thin pus liberated. This pus was microscopically examined by Dr. Lyons, and gonococci found. On February 18, temperature 104° F. Coma and death of the patient seventeen days after the beginning of the ophthalmia. No autopsy was obtained.

During recent years an increasing number of cases have been recorded, giving positive evidence that systemic gonorrheal infection follows not only the primary disease in the urethra, but is met with in infants suffering from ophthalmia neonatorum due to the

gonococcus. While the joints are most frequently affected, the process may attack practically all the tissues of the body. The gonococcus has been recovered from the blood, the pleura, the pericardium, endocardium, peritoneum, lymphatic glands, meninges of the brain and spinal cord, fasciæ, muscles and tendon sheaths, parotid glands and kidneys.

To his report of a case of Diffuse Gonococcus Infection of the Entire Upper Extremity (*Medical Record*, Oct. 3, 1903), Dr. C. A. Powers, of Denver, Colo., appends a very full bibliography up to that date. Arthritis, in connection with the purulent ophthalmia of the new born, is only occasionally mentioned in ophthalmic literature. In the *Ophthalmic Year Book* of 1904 reference is made to a tabular statement of 19 cases collected by Dahlstroem, including one of his own. These, with a case reported by Neuberger, make twenty cases reported from Europe. The joint affection began at the 8th to the 43rd day. The presence of gonococcus was fully established in nearly all cases. Two of the cases terminated in death.

THE SULCUS QUESTION FOR ARTIFICIAL EYE.

J. WINTER WAMSLEY, M.D.
PHILADELPHIA.

In this paper I set forth a simple method for the insertion of an artificial eye, which I know is more satisfactory than the methods now employed. The great difficulty which has attended the proper placing of an artificial eye has been, particularly from contracted orbital cavities, and in many instances a narrowing of the horizontal apertures of the eyelids, which ordinarily required an eye to be made specially to fit these so-called deformed and contracted cavities which were often filled with redundant tissue and in some instances there being no gutter-like purchase for the edge of an eye to rest in the cavity, it consequently would not be retained unless some operation were selected of the present ones in vogue, to produce an artificial sulcus.

Most of the operations for sulcus, principally, have been faults for the end desired in comparison to the method I wish to present, and I have met with the worst forms of cases in which it was even possible to wear an artificial eye, and the result is superior.

Take, for instance, the operation of implanting a ball beneath the conjunctiva. The main object intended by this means was to produce better movement of an artificial eye, which practically has amounted to naught. An artificial eye is not globular and

a half eye can never be made to rotate in imitation of nature's own on account of the abutment of its edges against the orbital tissue sides and base; then again, the subconjunctival ball was intended to so act against the back of an eye as to push it forward and take away sunken appearance.

In all instances the shrunken and contracted condition of the lids was lost sight of, but the principal question of how can a contracted orbital cavity, narrow and small lids, be made larger and a proportionate sized artificial eye be inserted to correspond in appearance to the fellow eye, or to the regular size and contour of the average human eye was overlooked.

The more ophthalmic surgery becomes advanced I believe the more will the mule operation become discarded and for the reason that the greater disadvantage of this operation is that it necessitates a constant rubbing of the tissue between the enclosed ball and the back of a glass eye and this is why in most instances, even after the tissue is well bound and healed over the ball constant friction produces chronic inflammation, and by the stretching and thinning of the most anterior part of the conjunctival tissues covering the ball, a pin point opening is discovered and the metal ball is seen shining through. If this condition is combated, it occurs again, and if it does not, then the artificial eye does not touch, and of what use has the ball implantation been, for in many instances the ball is spontaneously evulsed from the separation of the anterior membrane.

The grafting of sponge, one of the worst methods employed, adding difficulty to trouble, produces a hard, non-resilient base that for an operation to do a real practical good would first require excision. The paraffin injection has been known in many instances to cause a serious result by brain infarct. Then there is the tediousness of preparation for this method, instruments to be kept at certain temperatures, etc., and when the injections are made no regularity follows the shape of the solid mass when it congeals, and of what use is it when completed?

These methods of making a solid orbital stump have all required the final use of a shell eye, and here let me state that there is as much difference for the patient between a sharp, thin edge shell eye and the blunt edge double back eye, as there is between irritation and non-irritation, as there is between a chronic purulent discharge and a normal clear non-catarrhal lachrymal flow.

The sharp thin edge artificial eye is the meanest and most unsurgical applied eye that could be selected. There is no invention

in the shape of a glass eye which is to be worn in a cavity of sensitive and easily irritated mucous membrane as good as the well-rounded eye, bearing no points or sharp angles that would cause irritation by pressure at certain acute points.

No principle, however, has been any worse for the preparation of an orbit for an artificial eye than has been the gutter operation by the use of lead wire, for the sulcus obtained grasped the edges of the glass eye causing chronic purulent irritation, even in spite of applications strong as a tannery. Then there were frequent sudden copious discharges which, from the retained lachrymation posteriorly, escaped by over-pressure, being assisted, too, by movements of the faeial muscels as while the patient was in the act of wiping the face.

The principle I here set forth for the insertion of an artificial eye is first, to restore a contracted or filled up cavity so that a double back, round edged eye may be worn, and the method in which this is done is by a gradual dilatation of the orbital cavity with increasing sizes of hollow glass balls. For this purpose a set of seven is necessary, beginning with a ball of 13 mm. in diameter and each size increasing 2 mm. to a ball 25 mm. in diameter, which is the largest. On starting, the largest size which can be introduced is placed in the orbital cavity and retained with a pledget of cotton and a pressure bandage, otherwise the ball would be immediately discharged. The bandage is well tightened to make a back pressure. The patient is instructed to return each day, then a larger ball is inserted. In the past I used to wait for two or three days until the natural relaxation caused by the ball would allow the patient to completely close the lids over the ball. I do not now wait for this, but make quicker changes in the size of the ball every day and the dilatation is more rapid, but doing it in this way at any time during the dilatation the lids will not totally close over the ball, unless the one ball has been allowed to stand a few days.

There are some cases in which there is considerable redundant orbital tissue; in these cases it will take longer time for dilatation and for the hypertrophied condition to be absorbed from compression of the ball to mould the cavity. The average case takes short of a week to complete, and during the time necessitates a patient to constantly wear the pressure bandage. It is necessary, in using the glass balls, to dilate to the largest size that would be proportionate to the size of the orbit.

The bandage used to hold the ball in place for convenience may be made out of 18 ounce black broadcloth, as this cloth does not

ravel. Take a piece of cardboard three and one-half inches by two inches and cut off the corners about one-half inch: this is used for a guide in cutting out the cloth; then 18-inch strips of half inch cotton tape are to be sewed on each end of the broadcloth. This makes a neat and convenient single eye bandage for other purposes.

During dilatation, in some instances, slight soreness is caused. This becomes an advantage, as in this condition the orbital tissues become softer, more relaxing and redundant tissue either gives way or is absorbed. It is remarkable how in a small and contracted cavity in which, probably, the patient had been wearing a very small and irregular specially made eye and it being no larger than would be necessary to hold the cornea, dilatation becomes so easy, that within four or five days the cavity is in condition to take a large, well-proportioned artificial eye.

Sometimes during the dilatation there may be noticed here and there cicatricial bands which show drawing in certain directions through the orbital stump; this condition is relieved by snipping the bands directly across the sharp pointed curved scissors. Bleeding occurs, but the ball is placed back immediately and held in with the compress; the next day the orbit is healed and ready for a larger ball, until the required size is obtained.

Sometimes, during dilatation it will be noticed that there is a rolling of either lid somewhat over its margin. This needs no consideration, as after the complete dilatation, the orbit receives the double back eye in a most natural aspect.

After the orbit is prepared for the eye, then it is a good plan for the surgeon to have a few eyes of regular contour, irrespective of color; to try them severally to see which is the best size and best position of the cornea, so that the patient can be sent to an eye maker or to the wholesale optician to select the same size in the proper colors of the cornea and sclerotic.

I have had cases in which after the orbit was prepared, and for which an eye was specially made, the maker made irregular edges for what he thought would more easily put the cornea in proper place. Irregular edges should never be made, as within a short time the eye turns out of position, but the eye should always have regular oval lines about its general circumference. This is why I always try a model first, so that there can be no mistake in its contour.

When the orbit is prepared in the manner described, finishing with the use of the blunt edge, double back eye, it is surprising not only how comfortable it is to the patient, but that the lids close over the eye easily as a healthy eye: there is no drying of secretions

upon its surface, no staring and no sunken appearance for the reason that the orbit is to be well filled out with a sufficiently large artificial eye, and the resulting movement capacity of the eye is good and as much as an artificial eye can be made to move.

With the round edge, double back eye, lachrymation passes over its surface in every part without retention or pocketing of secretions which is caused by the old-fashioned thin shell eye, consequently there is no chance of irritation from decomposition of the secretions and no tendency of purulency.

There are some cases the surgeon will get in which the patient has been wearing a shell eye, and a groove has been formed all about from the orbit grasping the edges of the shell. These cases are mostly accompanied by purulent discharges and seem to be more or less of an infected cavity generally, but in these cases dilatation and preparation of the orbit is done in the regular manner to the fitting of the double back eye, after which if purulent discharges continue from the remains of the old irritation, an astringent wash is prescribed and in a short time the orbit becomes healthy again.

The double back eye does not require to be removed and the cavity and eye to be washed as often anywhere in comparison to the annoyance occasioned by the irritating shell eye.

The glass balls for dilatation are very easily obtained and inexpensive. Almost any surgical supply house can furnish them when given the dimensions of the increasing sizes.

Incidentally, I may state that after enucleation, after the acute reaction passes away, it is best to place a ball of fairly large size, changing it for a larger if necessary. It makes the orbit more even for the artificial eye and the tissues take the mould of the ball readily after new enucleation. The latter procedure is important, as it in all cases distends the cavity in such a manner that the surgeon can better know the best size of an eye to select for the proper finishing of the case.

The double backed is the finest invention for an artificial eye. It is commonly spoken of as the Snellen eye, although Mr. J. L. Borsch, the well known optician of Philadelphia, claims to be the originator. He is the inventor of many great originalities in the optical line.

Mr. Borsch claims that in 1894 he had the double eye made by Müller, an expert eye maker in Wiesbaden, Germany, and that they were the first made. Mr. Borsch says that he gave some specimens to Prof. De Wecker in Paris, and that he also gave them to many specialists of Philadelphia, who exhibited them at medical meet-

ings, and as Mr. Borsch states, about four years after, Snellen advocated them and it seems that by this and at this time began the reputation of the eye in connection with Snellen's name.

I may mention that it is not necessary to have the glass balls accurate in being a perfect sphere, but there should be no roughness or nodules left projecting upon the surface, from the ends left after being blown.

This method of introducing a proper artificial eye is to my mind the best and other than the use of the bandage on the part of the patient gives him no inconvenience or pain. It produces the finest and most practical result.

A NEW NEEDLE HOLDER FOR THE OPHTHALMIC SURGEON.

MARK D. STEVENSON, M.D.

Oculist to the City Hospital.

AKRON, OHIO.

(Illustrated.)

The following are the chief advantages of this needle holder :

1. The main handle is easily held in the hand, being long, of good diameter and corrugated so that it will not be slippery when wet with a solution.

2. The needle is very readily grasped and released by this holder. The thumb rests naturally on the short one-inch, broad ended handle, and any degree of pressure necessary may be easily made on the needle. This obviates to a great degree the danger of breaking the needle.



3. No catch is necessary, the release of which nearly always jerks the needle, which may therefore cut its way out, causing pain, especially if the operator has grasped the holder close to the needle and must move it through the hand until the catch can be released. The degree of this movement may be observed in moving a pencil through the hand, holding it like a needle holder.

4. The hand grasps this holder very close to the needle, greatly reducing its movement if there is the slightest tremor or movement of the hand. It allows the operator to get close to his work and he can readily steady his hand by resting it for support on the patient's face.

5. It will hold any sort of needle.

REPORT OF A CASE OF CONGENITAL CORECTOPIA,
WITH APHAKIA, AND A CASE OF CONGENITAL
LEUCOMA OF THE CORNEA.

H. B. GRATIOT, M.D.

DUBUQUE, IOWA.

(Illustrated.)

Absence of the crystalline lens, aside from those cases resulting from cataract extraction and trauma, are so rare that I venture the report of the following case:

A. T., aged 30, a native of Germany, was referred by Dr. F. W. Wieland in August, 1901, on account of a slight injury to his right eye. His family history negative. His general health had always been good. He had always had poor eyesight, but otherwise had had

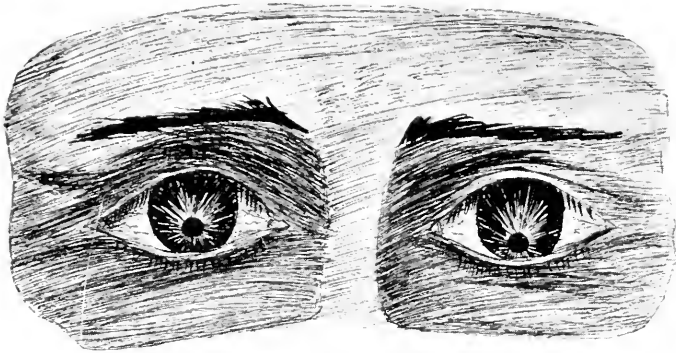


Figure 1.

no eye trouble. He states that his mother says "he was born with deformed eyes." Both eyes are apparently normal in size, the vertical diameter of the cornea measuring 12 mm. There is a rapid lateral nystagmus. The anterior chambers are deep and irides tremulous.

The pupils are both misplaced downward, the left more so than the right, the latter slightly larger than the former, measuring 4 and 3 mm. They react fairly promptly to artificial light. Both pupils round, assuming an oval shape, with the long axis vertical, after the installation of homatropin.

Ophthalmoscopic examination revealed a few floating vitreous opacities. There were atrophic spots in the chorioid, especially well marked in the right eye. On account of the frequent occurrence of dislocation of the lens in connection with corectopia, I suspected this condition in this case, but careful search failed to reveal the presence of the lens either in the neighborhood of its normal location or backward in the vitreous chamber.

Vision = O. D. 10/200. O. S. 15/200. With a + 13.00 D. lens vision = O. D. 15/200. O. S. 20/200. Ophthalmometer gave 3.00 D. as. ax., 105 in the left eye. The accompanying drawing, Figure 1, is rather crude, but represents fairly well the position of the two pupils.

I have recently had an opportunity of examining this case a second time, without changing the results of the first examination.

There seems to be no doubt that the condition of the pupils and the nystagmus existed at birth, and it is probable that both crystalline lenses were destroyed. The vitreous changes and the atrophic spots in the chorioid would indicate a previous intraocular disease, either during uterine life or after birth, at which time the lenses were probably destroyed.

The second case, Figure 2, is one of congenital leucoma of the cornea occurring in an otherwise normal child.

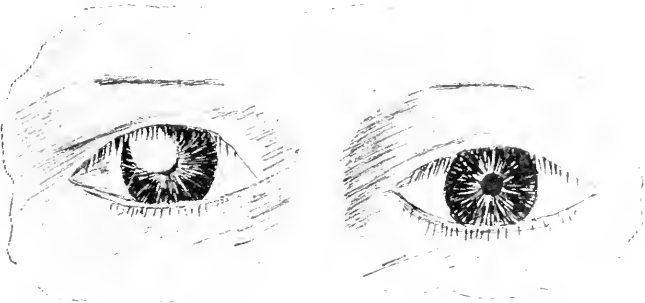


Figure 2.

L. N., aged 3 months, of German parentage, was referred by Dr. J. A. Mueller, of New Vienna, Iowa. The family history negative and the birth was normal. The child weighed ten pounds and has been in excellent health. The second day the nurse first noticed the white spot on the right eye. Dr. Mueller assures me that there were no signs of any inflammatory trouble at that time and the eyes have been in good condition since. At the time of my examination there was a large, dense, pearly white leucoma occupying the upper and outer quadrant of the right cornea. It extended downward and inward across the cornea for about 5 mm., almost entirely covering the pupil. It was about 4 mm. in width. At its upper border it was continuous with the sclera. Its border within the cornea was quite sharply defined, the surrounding tissue being perfectly clear. The pupil dilated evenly under atropin and, so far as I was able to determine, the eye was otherwise normal. The opacity did not contain any blood vessels that could be detected with the naked eye.

SYMPATHETIC OPHTHALMITIS AFTER PANOPHTHALMITIS.

H. V. WÜRDEMANN, M.D.

MILWAUKEE, WIS.

It is generally believed that sympathetic inflammation of the opposite eye does not follow panophthalmitis in the other. The publication of an abstract, in *Ophthalmology*,¹ of Ahlstrom's² article, in which he states that, previous to the report of his case, there were only two others, published by Schirmer,³ of this untoward event, led me to consult the two originals, which are herewith abstracted, and to report the only such unfortunate case seen in my practice.

Ahlstrom² had a case in a 40-year-old man, April 24, 1896, who had injured the cornea of the left eye, a week before, by a branch of a tree. He then had serpiginous ulcer of the cornea, with hypopion, dacriocystitis of both sides. The ulcer was treated by thermocautery, paracentesis and other treatment. Extirpation of both lacrimal sacs. May 4, 1896, leucoma adherens with fistula, V. = 6/36. The patient went home, returning Nov. 11, 1896, the left eye shrunken, sightless and panophthalmitic. R. E. V. = 5/60, iridocyclitis, cornea and media cloudy, but permitted of ophthalmoscopic examination, which apparently showed normal fundus. Enucleation of left eye November 11. Patient left observation November 23, when right eye V. = fingers at 3 m. A year later he was reported to be totally blind.

The bacteriologic examination of the enucleated globe revealed numerous staphylococci in the vitreous, retina and chorioid, but none in the blood vessels, optic nerve and intravaginal spaces.

Schirmer's³ two cases are as follows: (1) An insect flew into the left eye of F. P., aged 50, on July 28, 1887. An infection followed and finally ended in panophthalmitis. On October 17 an enucleation was done, with some difficulty owing to the adhesion of Tenon's capsule to the globe. On October 24 the patient was discharged from Schirmer's Klinik, with the wound entirely healed. On the 28th he returned, complaining of pain in the remaining eye, that presented an exact picture of sympathetic uveitis. There was an iritis, with posterior synechiae, exudates in the pupillary

1. *Ophthalmology*, January, 1905, p. 251.

2. Ahlstrom, Gustav: Zur casuisti der sympathischen Ophthalmie. sympathische Ophthalmie nach Panophthalmie, *Centrallblatt für prak. Augenhekd.*, July, 1904.

3. Schirmer: Klinische und pathologisch-anatomische Studien zur Pathogenese der sympathischen Augen-entzündung. *Archiv f. Ophth.*, xxxviii, 4, 1892, pp. 150-154.

area, muddy aqueous humor and marked ciliary injection. Unfortunately, the patient declined further treatment, but the answer to an inquiry made Oct. 24, 1892, was that he became totally blind. The anatomic examination of the excised eye showed the usual infiltration by pus cells of the lymph channels and small vessels.

(2) C. R., aged 4, after an attack of measles, suffered from an inflamed left eye. On April 14, 1886, he was found to be suffering from panophthalmitis, resulting from a perforated corneal ulcer. Enucleation declined. On August 17 he was brought once more to the Klinik, complaining that the right eye had been affected for three weeks. It was affected by a well-developed malignant iritis. The iris, presenting many posterior synechiæ, was altered in color, its markings cloudy, its ciliary border retracted and the pupillary portion bulging forward. The anterior chamber was shallow, and on the posterior surface of the cornea were a number of thick, cloudy deposits. The left eye, which had atrophied, was enucleated.

The right eye was treated for a time, and he then left the hospital. On Jan. 1, 1887, the eye was almost quiet, but the pupillary area was covered by exudates. An iridectomy was done, but the coloboma soon filled with deposit. On March 3 another portion of iris was removed, exhibiting at the same time mercurial inunction. The eye colored somewhat, but the iridectomy space was once more filled with exudates. Later, in a letter from the child's father, it was learned that the eye gradually improved, without treatment, so that he was able to learn to read and write.

Schirmer believes that there can be no doubt about the migratory ophthalmia in these two cases. The interval that elapsed between the injury to the first eye and the involvement of the second, the form of the iridocyclitis in each and the course of the disease were entirely typical.

My own case occurred 13 years ago, but unfortunately the specimen was not submitted to a thorough anatomo-pathologic examination, so I can now give only the clinical history.

W. M., aged 41, consulted me July 4, 1892, on account of loss of sight in both eyes. Examination showed incomplete cataract in the right, complete in the left.

V., right eye, = counting fingers at $2\frac{1}{2}$ m., striated cortical opacity of the lens. Left eye = light perception and full projection, complete opacity of lens; mobile pupils in both eyes.

Previous history: Six months before he had been struck in the left eye by a nail and the sight was immediately lost (probably from hyphema); partial recovery and then reduction to perception of light. No scar or evidence of previous inflammation was evident

at time of examination. The sight of the right had been good enough for him to work at carpentry until about three weeks before the examination. No conjunctival secretion. Tear passages and nose clear.

Believing that the left eye had not suffered from the alleged injury, except by the production of a traumatic cataract, the patient was sent to the hospital, and, after 24 hours' preparation by boric wash, used three or four times, a simple extraction was made at noon, lavage of the anterior chamber with 3 per cent. boric-acid solution, no iris prolapse and operation very clean. Wire gauze mask over absorbent cotton for dressing. This dressing was not disturbed for 48 hours, this being my custom unless symptoms warrant an examination before. On the morning of the third day the patient was restless, temperature 99.4 degrees, complained of pain in the eye operated on. The dressing was made at noon, when the cotton was found soaked in pus, which poured from the eye when the lids were opened. The anterior chamber was full of pus, the wound gaping and edges infiltrated.

Treatment: The eye was cleansed with 1:5000 bichloride of mercury solution, the hypopion cleared away by forceps and lavage; orders given to nurse to wash out eye every two hours with 1:10000 bichloride, hot compressing and atropin (we did not have the means of combating infection then that we now have, i. e., the organic salts of silver, iodoform discs in the anterior chamber). Saline cathartic, quinin. The same evening the temperature rose to 101 degrees, the conjunctiva became chemosed. Irrigation of the anterior chamber and removal of the hypopion was made the next day. On the next the cornea sloughed and the patient left the hospital July 20, without my knowledge.

Aug. 17, 1892, he came to the office, being led there by his wife. There was an inflamed, somewhat atrophic globe in the left, the sight of the right was diminished to perception of light, the ball tender, the pupil filled with exudate, the iris adherent to the lens; in fact, a severe iridocyclitis of sympathetic type and origin. The patient was sent to the hospital and the left globe enucleated. The sympathetic inflammation in the right continued, despite energetic treatment by mercury and local applications, so that when discharged several months later he was totally blind. (We did not then possess the method of Gifford of treatment by large doses of sodium salicylate, with which I have had some success in the treatment of several subsequent sympathetic cases). After about a year he acquired a hand organ and stationed himself on one of our principal thoroughfares. It was one of my sorrows that for several years I had to pass him daily and to hear him grind out his dismal tunes.

Leber⁴ and Deutschmann⁵ thought that the severe inflammation of the panophthalmitis closed up the channels so that germs could not pass through the lymph passages in the optic nerve to the other eye.

Gifford⁶ considered that the infiltration of the pus corpuscles in the lymph spaces of the optic nerve was so great that it prevented the bacterial invasion of the other eye.

Schirmer,³ however, in the examination of two such panophthalmitic globes, which had caused inflammation in the other eye, found many pus pockets in the intravaginal spaces, and Ahlstrom found such in his case. Schirmer thought that a chronic inflammation of the uvea remained after the purulent disease subsided and that this was the cause of the sympathetic disease.

Ruge⁷ gives a positive theorem that "sympathetic ophthalmitis" is impossible after a purely purulent panophthalmitis of the first

Ahlstrom,² from study of Schirmer's pathologic findings in his two cases and in the one he himself reports is convinced that the fibrinous exudate and connective tissue organization forms a healing process which stops up the connecting channels between the eyes, preventing the passage of germs.

RESUME.

The study of these four cases, all radical failures in treatment, all reported after the lapse of years, when the ignominy of failure had been relieved by time (we know that such grievous failures are more apt to be concealed than reported), shows that panophthalmitis does not always cause a contracting connective tissue formation that stops the pus germs from migrating from the injured eye to its fellow, or does not always cause such an intense local inflammatory action in the original eye to cut off the nerve connection.

THE EYE KLINIK AT BONN. A MODEL OPHTHALMIC HOSPITAL.

CASEY WOOD, M.D.

CHICAGO.

(Illustrated.)

As comparatively few American ophthalmologists are acquainted with what, to my mind, is the most favorably situated, if not the

4. Leber: Bemerkungen über die Entstehung der Sympathischen Augenerkrankungen, *Archiv für Ophth.*, xxvii, 1.

5. Deutschmann: Ueber die Ophthalmia Migratoria, 1889.

6. Gifford: Beitrag zur Lehre der sympathischen Ophthalmie, *Archiv für Augenheide*, xvii.

7. Ruge: Pathological-Anatomische Untersuchungen über Sympathische Ophthalmie und deren Beziehungen zu den übrigen Traumatismen.

most complete, ophthalmic hospital in Europe. I make no apology for giving a short account of a recent visit to the Universität Augen Klinik at Bonn. Those who wish to read a more detailed description of the building and of the work done in it will do well to consult pp. 557-577, vol. lxi., 1903, of the *Klinische Monatsblätter für Augenheilkunde*, in which Prof. Th. Saemisch gives a complete history of this model eye hospital.

Professor Saemisch was not in Bonn during my stay, but his courteous first assistant, Dr. zur Nedden, well known for his contributions to ophthalmic literature, escorted me over the premises and answered my numerous questions.

The building at Bonn is not a large one (frontage of about 160 feet), and neither the ambulatory nor the indoor apartments are built upon a large scale. Indeed, the same remark applies to all departments of the klinik. I have never been much impressed by *mere size* in hospitals of any sort. It is no consolation to the patient that he has been poorly treated, or to the attending surgeon that he has been badly served in the largest hospital in his locality. It is chiefly on the ground of efficiency in all its various branches that I would advise those who contemplate the erection of a new or the improvement of an existing hospital that they bear in mind the klinik at Bonn.

The building itself was begun in 1900 and finished in 1903 under the supervision of the minister of public works and the university officials. The site chosen was an unusually favorable one—a garden between two streets—a situation at once central, pleasant and quiet. The entrance is on Wilhelmstrasse through a court opening on grounds that entirely surround the building itself. Not the least advantage of this site is its isolated character, protected from noise and other disturbances—in the city and yet not of it. I believe this will be appreciated by those (both patients and attending surgeons) whose recollections of city hospitals are generally associated with resounding pavements and other disturbers of a night's rest. We all know, too, the evil effects of insomnia upon all forms of ocular disease and the corresponding help it is to the ophthalmic patient (particularly if he has just been operated on) when he has been able to sleep soundly. This great advantage, so commonly lacking in many klinikens, is one of the chief attractions of the institution at Bonn.

The other university buildings, beautifully disposed along the Rhine bank, of which the town is justly proud, have no direct connection with the eye department, and yet are only a few minutes' walk from it—an advantage to students who are studying other branches of surgery. The Ophthalmic Klinik, built of stone, brick

and glazed tiles, five stories high and a basement, lies north and south, its eastern facade facing the Wilhelmstrasse. About the center of this east front rises a tower containing the principal stairway and the chief entrance. In a specially built shaft an electric passenger elevator connects all the floors from the well-lighted kitchen to the fifth story.

In the building, as may be noticed in the plans,* the outdoor department is entirely separate from the hospital proper. The advantages that accrue to this arrangement are self-evident.

As before stated, the hospital is a small one, as ophthalmic hospitals go nowadays. Its normal capacity is 48 beds, with a possible



Fig. 1.—The Eye Klinik at Bonn.

(emergency) addition of 30. Of the 48, 6 are reserved for children, 4 are intended for private patients of the better class, and 2 are free beds.

The building is made as nearly fireproof as possible, being built throughout of stone, brick, cement and iron. The floors are almost entirely laid terrazzo, and both they, the windows and the ceiling exhibit the latest devices (rounded corners, etc.) for keeping the apartments clean. Indeed, terrazzo forms the floors in all the closets, the kitchen and the laundry, as well as of the other working rooms of the hospital. Dr. zur Nedden told me that two years' trial of it convinced him that it withstands wear and tear better and is more easily kept clean than any other material he was ac-

* *Klinische Monatsb. f. Augenheilk.*, vol. Ixi, 1903.

quainted with. In the patients' rooms and in the apartments of the staff, heavy linoleum is employed as a floor covering. Wood is sparingly used in the Bonn hospital, only for such purposes as doors and, in the directors' room, where an oak parquet floor has been laid. Portions of the window frames are also made of wood. These are mostly constructed of marble and iron, are made double and are so arranged that ventilation at all seasons is complete and easy.

Only in the living rooms are the walls papered. The walls of the operating rooms are entirely, and of the kitchen and the bath rooms partially, covered with glazed tiles. The other rooms are treated with light colored enamel paint. The rooms of the poliklinik are furnished with lincoستا; the "dark" rooms with black enamel paint. † loco cit.

The kitchen basement is lighted with gas; in the rest of the building electric light is used, except in the operating rooms and portions of the outdoor departments, to which both forms of lighting are supplied.

Both hot and cold water are supplied (after the most approved American fashion) to every room in the house above the basement floor and, quite a rare provision in Germany, our own hot water system (generally called "central heating" on the continent) is installed throughout the building. Instead, however, of placing the radiators on the floor (and so interfering with the cleansing of the rooms), they are set in iron frames which form a part of the building itself.

The closets and urinals are of the latest pattern and provided with running water.

The corridors are 8½ feet wide; the ceilings vary in height from that of the cellar basement (which is 8½ feet high) to the other stories, most of which are nearly 14 feet in height.

The furnaces and ventilating apparatus are placed beneath the west side of the building. In winter the air entering the building is filtered through muslin and supplied to the building by fans driven by electricity.

The kitchens are very clean, airy, well-lighted rooms that would do credit in appearance and equipment to a modern American hotel. My polite guide seemed to take as much pride in showing them to me as he did in exhibiting his laboratory.

The outdoor department occupies about one-half (the southern part) of the ground floor. It has its separate entrance, separate closets, separate waiting, examining and "dark" rooms; rooms provided with tables for examining secretions, for treating patients—

indeed, all the paraphernalia any one could desire for effective ambulatory practice. It is the policy of the administration to keep

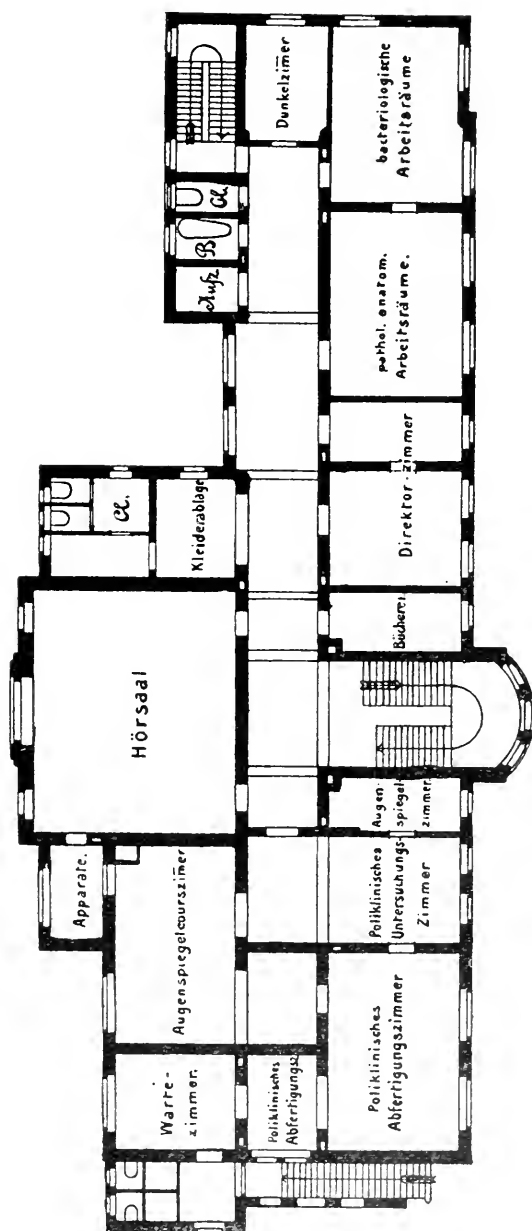


Fig. 2.—Plan of Bonn Eye Klinik. Ground floor.

this part of the eye service distinct from the hospital proper, and only one (private) door leading into the corridor joins the two.

The rooms devoted to teaching are on this floor and consist of a suite at the back of the building. About the lecture room (which is entirely shut off from the hospital proper) are coat rooms, closets and urinals, a room for apparatus and a dark room for ophthalmoscopic purposes. The arrangements for the examination of patients and for illustrating pathologic conditions to a class of thirty or forty students are ingenious and effective. I regret that lack of space prevents a further description of the methods Professor Saemisch and his assistants have worked out, not only in the lecture room, but elsewhere in the building. Suffice it to say that he much prefers movable tables and chairs to any form of amphitheater instruction. Atlas pictures, each pasted on a wooden frame and transparent celluloid, have been found the best form of illustration to pass around the class room. I need not do more than mention wall maps, epidiascope, stereopticon, microscope-projection and other apparatus similarly employed to supplement the knowledge derived from inspection of patients. In passing, I may add that rabbits are used to teach the students the first steps in ophthalmoscopic examination and before they are allowed to use the mirror or human eyes.

On the east side of the house is the library; next to that is the director's room, leading into two laboratories, pathologic and bacteriologic. The former of these is 26 by 18 feet, the latter 24 by 18. These rooms, in common with all the others in the building, are unusually well lighted with wide, high and clean windows. It is not necessary to add that in these workrooms, which are among the best equipped laboratories in Europe, are to be found every piece of apparatus, form of reagent and other convenience for the satisfactory prosecution of research in the pathology of the eye. Connected with the bacteriologic laboratory is a dark room for photography of the fundus and other purposes involved in advanced studies of that description.

In the northwest corner of the building, on the ground floor, are the baths, closets and urinals for private patients and the staff of the hospital, shut off, as in all other instances by special doors, from the remainder of the house.

The second floor (*Erster Stock*) accommodates the male portion of the patients and the official staff. At the north end is the operating theater, with its sterilizing chamber and preparation room. The south end has a room for the nurses. On this floor, also, are rooms with one or two beds (for private patients of the better class), and others containing, each, five beds, the latter of the cheaper variety. One room containing a single bed next the stair-

way is used as an isolation chamber. Six beds are reserved for cataract cases only; six others are placed in darkened rooms. There is one ward on this floor provided with twelve beds.

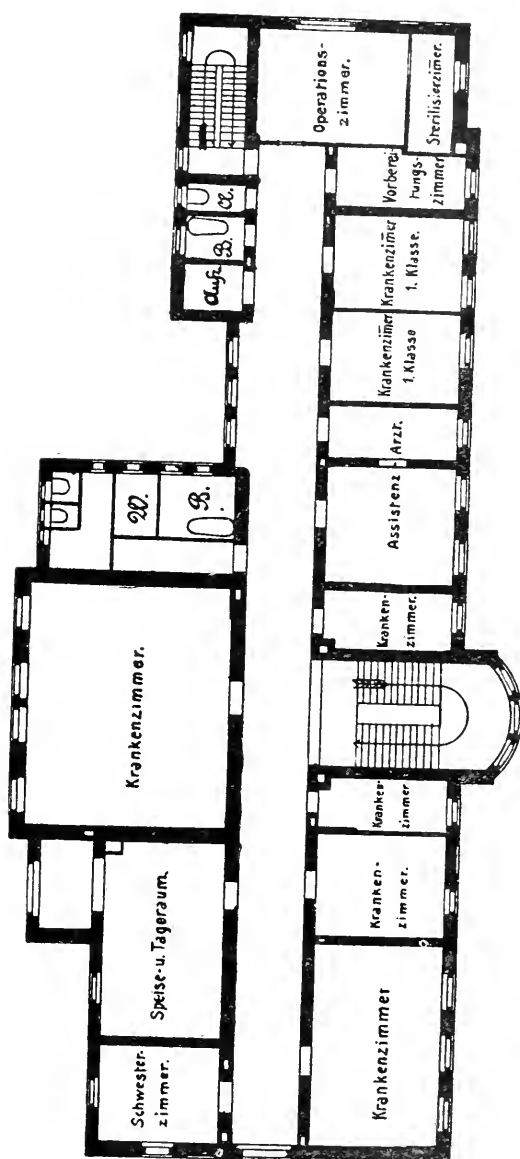


Fig. 3.—Plan of Bonn Eye Klinik. Second floor.

The furniture, size and shape of the iron beds have been carefully considered from all standpoints. Each patient has at least 40 cubic meters of aerial space.

Patients operated on for cataract and other serious conditions have their own treatment tables, disinfectants, towels, applications, bandages, etc., kept in glass and iron cupboards reserved for the purpose.

On the west side of the building are the dining rooms, well lighted, and provided with direct connection with the kitchen.

The operating room occupies the northwest corner of the building and, as stated, is lined with white glazed tiles to the ceiling, which is covered with white enamel paint. It is 20 by 16 feet, with a window nearly eight feet wide, made of glass set in iron frames. Every reasonable precaution has been taken to make effective the cleansing of the room and its furniture. All the corners about the floor and ceilings are rounded and there is no part that is not easily accessible to hot water and soap. The glass and iron operating table, the easily sterilized stools, frames, pans, cupboards and instruments were quite in keeping with the elaborate sterilizing apparatus in the next room and with the other equipment of the hospital.

The third story (*Zweiter Stock*) is devoted to female patients and is almost a facsimile of the second floor.

The fourth floor is the "reserve" part of the hospital, capable of accommodating five additional women and twenty-five more male patients. It is finished and furnished throughout like the lower floors. In a portion of this upper story is kept the clothing of indoor patients.

In the environs of the hospital are separate grounds for female patients. I presume I ought to mention, also, that on the south side of the building are small apartments for animals used in ophthalmoscopic and other studies.

The cost of this building was about \$36,000, of which \$14,000 were spent in furnishing it—surely a very small sum for such a satisfactory result.

Apart from the eminently practical size, situation and shape of the building, rendering its ventilation, lighting and heating a comparatively easy undertaking, I was much struck by the many provisions that showed consideration for the *comfort* of the patients, not the least being the care bestowed upon the grounds and gardens and the successful attempt to protect the inmates of the hospital from the noise, smoke and dust of a fairly large city.

Professor Saemisch draws our attention* to five other advantages that his hospital possesses: (1) Complete separation of the outdoor department from the hospital proper; (2) complete separa-

* *Loco cit.*, p. 559.

tion of the rooms used for the instruction of students from the clinical departments; (3) the most complete possible isolation of the operative theater and the rooms connected with it; (4) the entire separation of the male from the female rooms and wards; (5) arrangement of the building so that, as far as possible, not only the patients, but the workers in each department (nurses, internes, servants) shall have their own separate entrances, living rooms, closets, etc.

I regret that I was unable to obtain a better photograph of the building and its surroundings than appears in Professor Saemisch's article. It hardly does the subject justice.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, NOVEMBER, 1905. VOL. XIV. No. 11, NEW SERIES.

Editorials.

A BLESSING IN DISGUISE.

Not very many years ago we had an era of extremes in ophthalmology. Men advertised themselves through the advocacy of methods which caused much criticism pro and con. These men had their followers whose ideas were as extreme as their own. It seemed for a time that in order to have a following something must be brought out which was contrary to rational thought and practice, and that this something must be adhered to, exploited and defended at the expense of a torrent of adverse criticism. Lesser lights, in order to shine and obtain notoriety, rallied to the support of the standard bearers. The result was a harvest for the cranks at the expense of the suffering public, but finally, slow but sure reaction relegated such practices to the oblivion they deserved.

Looking back upon this in the light of today, what do we see? Much certainly to reflect upon. We can not say that each theory, thus strenuously upheld, has not been productive of some good. This good remains, and we may justly thank the fathers of these theories for having so staunchly defended their positions. In order for the attacking parties to successfully break in, a comprehensive knowledge of these positions was essential and what good there was was found by the attacking parties and given to the world. It sometimes takes a crank, with fire and energy, to stir up with his sensational ideas the dormant energy in the slow every-day worker necessary to bring about real investigation and establish true scientific facts. The crank is so restricted in his sphere of mental action that it may not be possible for him to get at the real kernel of truth which his theory contains. His is the mind of the discoverer, with the tenacity of purpose to maintain his position against all who seek to undermine it. In his defense he becomes so biased that he actually believes that which at first he only sought to make others believe. Secure in his own mind as to the correctness of his theory, it, with him, becomes a fact, and no further effort on

his part is made to prove it except by dogmatic statement. He becomes blind to the real truth which has been pointed out by others. Because of his combative disposition, the good work he might have done is left for his supposed enemies to do. We must credit him, however, with having been the *vis a tergo* productive of the good work with its results which lives today.

MELVILLE BLACK.

Reviews.

LANGE'S THEORY AS TO THE CAUSE OF PROGRESSIVE MYOPIA.*

G. HOSCH.

(Reviewed by Robert L. Randolph, M.D.)

The fact may be recalled that at the last meeting of the International Medical Congress (in Lucerne) Lange exhibited some anatomical specimens of eyes which were the seat of progressive myopia. These eyes showed an entire absence of the elastic fibers in the sclera. He then advanced the opinion that in this absence or faulty development of the elastic fibers of the sclera is to be found the explanation of progressive myopia. This condition is not only congenital, but can be inherited. Objections to this theory were not long in forthcoming. It has been very properly urged that if the sclera of very myopic eyes were really lacking in elastic fibers it would be exceedingly difficult to understand why the frequent elevations of intraocular tension incident upon near work (elevations which according to most authorities are responsible for the staphyloma which is seen in myopia) do not produce an ectasia of the sclera at the point of the sclera which is thinnest instead of at the very point where it is thickest. Again, why is not the nasal portion of the posterior pole of the eye exposed to the same extent to this stretching? Why, too, does not the anterior portion of the sclera in the neighborhood of the ora serrata, which is well known to be much thinner than the posterior part of the sclera show evidences of this stretching? Why not at least that part where are situated the muscular attachments which afford no protection against the stretching process? A stretching of the eyeball confined to the posterior pole as we find in myopia is only comprehensible if one can either assume or prove that only the posterior and especially the temporal portion of the sclera has no elastic fibers.

Hosch presents us with a critical study of the whole question and has based his conclusions upon careful anatomical examinations. It is interesting to note that Hosch went over carefully several normal eyes, with which he compared the pathological eyes. The pathological eyes embraced several myopic eyes, where the

* Von Graefe's Archiv. für Ophthalmologie, vol. lxi. No. 1.

myopia ranged from 1.75 to 20 dioptries. I have gone over his anatomical findings and I discover nothing markedly different from what one finds in normal eyes. Even in the case of the eye in which there were 25 dioptries of myopia associated with posterior staphyloma and atrophic changes in the choroid the elastic fibers were found to be numerous. Certainly in the cases which were examined by Hosch there was no difference in the number of elastic fibers from the number which is usually met with in the normal eye. Elschmig (*ibid*) has gone over practically the same ground and he found in all the eyeballs which he subjected to anatomical examination that the elastic fibers were present, and this was true even in cases where there was marked posterior staphyloma, and so far as this question of elastic fibers was concerned he failed to find in any case so few elastic fibers as to justify him in concluding that he was dealing with a pathological condition, or rather with an abnormally small number of these fibers. When variations from the normal were noted it seemed proper to regard such variations as physiological and not pathological. The latter observer also found in that part of the sclera immediately around the nerve head and in the intervaginal space that there was no deviation in the number of elastic fibers from the normal. One is forced to the conclusion then that Lange's hypothesis that myopias rest upon a congenital absence or faulty development of the elastic fibers of the sclera is not founded on a rock, to say the least.

THIGENOL IN OCULAR THERAPEUTICS.*

DR. ALFREDO FORTUNATI.

(Reviewed by William Dudley Hall, M.D.)

About three years ago there appeared a new therapeutic agent which, it is claimed, will prove to be a valuable substitute for ichthyol. It is a soda salt of a sulfo-oil, prepared by treating almond oil with sulphuric acid, and appears as a dark brown, odorless, almost tasteless liquid, soluble in water, alcohol and glycerin, and easily incorporated with lard, vaselin, lanolin, etc. It undergoes no change from exposure to light and does not cause permanent discoloration of the skin or fabrics. It is a resolvent, an analgesic, an antiseptic and a keratoplastic. To determine its action upon bacteria, solutions ranging from 1 per cent. to 50 per cent. were prepared and it was found that the growth of anthrax and staphylococcus aureus was to a certain extent inhibited and cultures of

*Annali di Ottalmologia, xxxiv., 7-8.

streptococci upon agar remained negative in its presence. When the pure drug was placed upon the various culture media no growth of bacteria could be obtained. It possibly has some action upon the animal cell whereby it renders the protoplasm immune to the influence of micro-organisms, and, by acting directly upon the bacteria, destroys them or attenuates their virulence. Weak aqueous or glycerin solutions (1 to 5 per cent) when instilled into the healthy conjunctival sac cause nothing more than a slight feeling of warmth, unless the lower lid is held away from the eyeball to allow longer contact, when a very slight smarting is noticed, together with a little redness. There was no anesthesia. The sensation of smarting bears a direct ratio to the concentration of the solution up to 50 per cent., beyond which no increased discomfort is noticed. The mucosa is somewhat redder than usual, but the redness soon disappears, leaving behind an evident ischemia and a kerato-conjunctival hypostasis, which lasts from five to twenty minutes and which seems rather to depend upon individual peculiarity than upon the strength of the solution. Somewhat different is the behavior of the ointment, whatever be the excipient employed. Greater toleration is shown when the remedy is incorporated with animal, vegetable or mineral fats than when dissolved in water or glycerin. No other signs of irritation, modification in the condition of the iris or pupillary reflexes have been noticed.

In four cases of moist and dry exzema of the lids a 5 per cent. ointment was used with satisfying results, although the condition was of unusual severity. In twelve cases of squamous blepharitis after removing the scales with a soda solution, ointments varying from 10 to 50 per cent. were applied morning and evening, and, in obstinate cases, the pure thigenol was applied by means of a brush and allowed to dry. In the two cases in which there was an acute edema, lard was substituted for vaselin with rapid disappearance of the complication. Of course, the general treatment, attention to hygiene and correction of errors of refraction, was not neglected. All cases improved, three seemed to be cured, and where relapses occurred following suspension of the use of the drug they were mild in character. Ten cases of ulcerative blepharitis first underwent epilation to open up the follicles, which was followed by application of the nitrate of silver pencil to the small ulcerations and then the lids were energetically rubbed with cotton soaked in a 10 per cent. glycerin solution. At night absorbent cotton spread with the ointment (10 to 50 per cent.) was placed upon the eyelids, the stronger ointments being used in rebellious cases. In the morning after the remains of the ointment had been washed away with a warm alkalin solution, any small abscesses that might have formed

were evacuated and the pure thigenol was carefully applied by means of a fine brush. The results were excellent, as all the cases were practically well in from three to six weeks, and there were no relapses during the three months that the patients were under observation. Although 68 cases of vesicular kerato-conjunctivitis were treated histories were only complete in 24. All were treated alike, which consisted in the use of a 5 per cent. solution at home twice a day and at bed time an ointment of the same, and when indicated atropin and fomentations, together with the internal use of iron and iodine in some of its various forms. In all of the cases a soothing effect was noticed, for the children cried less and could open their eyelids in a much stronger light than before. It was found also that nocturnal pain could be controlled by the instillation of a few drops. It seemed to hasten the cure of phlyctenular conjunctivitis. In eight cases of deep ulcer of the cornea in adults, the majority being of traumatic origin, it was used either as a solution in glycerin of from 10 to 50 per cent. or as an ointment of corresponding strength, or as the pure drug, as weaker preparations did not seem to have the desired effect. Improvement was noticed within 48 hours.

Complications as they appeared were met in the ordinary way. The analgesic action renders it possible to dispense with the use of cocaine in certain corneal conditions when it might tend to delay the healing process. In the acute conjunctival catarrh of Weeks it did not seem to have any appreciable effect upon the general result unless there was corneal involvement, when the final outcome was better than might have been expected. The same thing was noticed in three cases of conjunctivitis due to the diplobacillus of Morax. Ten cases of trachoma complicated by pannus, although strong solutions and ointments of the pure drug were used for three months, were not especially benefited except as regards the corneal pannus, and, in this respect, the results were especially gratifying both on account of the relief from pain due to the ulceration and also that due to the application of copper sulphate. The ten cases of chronic catarrh of the lachrymal sac for which solutions of 5, 10 and 20 per cent. strength were used for the purpose of irrigation, so improved that, after a few days, the secretion had almost disappeared. In order to obtain the best results the irrigation should be abundant and long and it is well to remember that the ordinary lachrymal syringes are ill-adapted for this purpose. The irrigator of Neuschüler, however, meets the requirements demanded.

Dr. Fortunati does not hesitate to claim superiority for thigenol

over permanganate, ordinary astringents, bichlorid of mercury, silver nitrate or protargol, as they may not be used in solutions of sufficient strength to obtain the desired effect. Lugol's solution is the only one that can in any way be considered in this respect. The after effects of thigenol irrigation are not at all unpleasant. From the cases just described it will be seen that thigenol is a valuable addition to ocular therapeutics. By its resolvent, analgesic, antiseptic and keratoplastic action it is found to be a rational application for ulcerative corneal processes. As an analgesic it lessens the pain; by its antiseptic action it destroys micro-organisms or diminishes their virulence; by its keratoplastic power it revives the energy of the cells and fortifies the protoplasm; through its physical property of pellicle formation it in a way restores solution of continuity and thereby aids in rapid repair. This likewise is noticed in other tissues than the cornea. It is less efficacious in acute and chronic conditions of the conjunctiva, yet if the cornea becomes involved the final result may not be unfavorable. Both thigenol and ichthyol act through the organically combined sulphur that they contain. It may be said in favor of thigenol that it is more constant in its chemical composition and that it contains more sulphur. Ichthyol as at first presented was a sulpho-ichthyolate of soda, obtained by treating bituminous shale found in the Tyrol by concentrated sulphuric acid and afterwards with carbonate of soda and later an ammonium ichthyolate appeared as the result of saturating the acid with ammoniac. Thigenol contains a definite 10 per cent. of sulphur in combination, while ichthyol varies, never, however, containing more than 8 to 9 per cent.; it is a weak and uncertain bactericide, while thigenol without being enumerated among the powerful antiseptics has a definite antibacteric value. Ichthyol has a disagreeable odor, stains fabrics and is costly, while the opposite obtains in the case of thigenol.

ECHINOCOCCUS CYST OF THE ORBIT.*

L. BARDELLI.

(Reviewed by William Dudley Hall, M.D.)

In view of the fact that cysts of the orbit due to echinococcus are very rare, there being, according to Bardelli, scarcely 100 reported, of which but eight are to be found in Italian literature, it was thought that the following clinical history might prove of value, especially as it offers suggestions from a diagnostic point of

**Annali di Ottalmologia*, Anno xxxiv., Fasc. 5-6, 1905.

view. A female, about 39 years of age, of medium stature and well built, appeared at the clinic in Florence with pronounced exophthalmos early in January, 1904. The family history was excellent and the patient herself had always been well until one year and four months previously, when she had a severe attack of typhus. About the time she left her bed she noticed, off and on, deep seated pain in the right orbit, for which she received during the following summer mercurial inunction and iodid of potash. When received at the clinic there was mydriasis, pupils not reacting to light, T.—vision shadows, displacement forward 13, upward 3.50 (Weiss) and edema of upper lid. There was a history of six confinements, a movable kidney, normal heart, urine and feces. Blood, by hemometer, 70 per cent.; red corpuscles, 3,500,000; white, 6,500; eosinophiles, 13 per cent. The exophthalmotrope of Weiss records the forward displacement as being 15 m. and the upward as 4 m. Movement of the globe is abolished downwards and very slight in other directions. By carefully introducing the finger between the lower margin of the orbit and the globe a small nodule, more or less hard and elastic, may be felt, which is not painful on pressure. By the ophthalmoscope the dioptric media are found to be transparent and the posterior and lower part of the fundus extending from the margin of the disc almost to the equator is seen to be raised. The papilla is swollen, moderately inflamed and surrounded by a grayish exudate. The veins are enlarged and tortuous. A few small hemorrhages were noted. Pulsation and bruit were absent and the exophthalmos was not reducible. The pain, exophthalmos, papillitis and marked increase in polynuclear eosinophiles being suggestive of hydatid cyst of the orbit paracentesis was done and the resulting fluid was clear in color; had a sp. gr. of 1012; alkaline reaction; blue to the Biuret test; the characteristic ring to the Heller's test; by heat and acetic acid, albumen corresponding to 0.10 to 0.20 0/00. Chlorides 2.925 0/00; hooklets were not found. The cyst was opened freely, three daughter cysts removed and the cavity was thoroughly curetted and irrigated, with prompt healing. The exophthalmos was scarcely perceptible; tension was subnormal; vision ultimately 0.5; movements within normal limits; a slight progressive neuritis with suggestion of future atrophy.

The great difficulty in making an exact diagnosis in the case of tumors of the orbit is because the majority of the symptoms are found to be common to many of the different tumors met with in that locality. It is only with a certain regularity that this affection is accompanied by pain and papillitis and these symptoms can not be pathognomonic, as they are inconstant and not peculiar

to hydatid cysts. In some cases pain seems to be merely the result of compression or distension of tissue, sometimes it appears early, sometimes it appears late, and at times it is entirely absent. An ophthalmoscopic examination is often difficult, sometimes impossible on account of the condition of the cornea. Fluctuation can not be depended upon and the same may be said of the site, age of the patient and duration of the disease. It is, therefore, possible that the condition may be considered as a steatoma, dermoid, osteoma, malignant tumor, abscess or even cellulitis.

When Aebard, in 1900, stated that in cysticercosis, irritation caused by the entozoa was not the only factor, but that there was a truly toxic element and that the eosinophilia was the expression of it, H. Memmi undertook the systematic examination of the blood of such patients as came to the polielinie at Siena and likewise came to the conclusion that the eosinophile should be considered constantly present in patients who have echinococcus cysts, and laid great stress upon the value of hemodiagnosis in hydatids. Since then others have busied themselves with the subject and at present it is generally admitted that in hydatid cysts eosinophilia is the rule.

When it is a question of differentiation between hydatid cyst, carcinoma or abscess an examination of the blood will aid in arriving at a correct diagnosis, for if there exists an eosinophilis it is probably hydatid; if anemia with hyperleucocytosis it is probably cancer, and if hyperleucocytosis with polynucleosis without anemia it is probably abscess. Since those who have been endeavoring to establish the relations existing between hydatids and eosinophiles have rather directed their attention towards the lungs, liver and mesentery, the question naturally arises whether the same conditions obtain when applied to the orbit and whether in the initial stage of hydatid of that locality there is likewise an eosinophilia, as it is logical to suppose that toxic products are in direct relation to the development of the parasite. Eosinophilia being associated with conditions more general in character it assumes diagnostic value only through their exclusion.

A study of the tension would be interesting, as observers do not seem to agree in their findings, as some have noted it to be increased, others as diminished, while some have found it to be normal. Elevation of the lower and posterior part of the globe has been noticed in abscess. The increase in tension may be explained as due to disturbances in the circulation resulting from compression, but the little work done in this direction does not authorize one to consider it the only cause. The diminished tension may be regarded as the

result of less fluid in the eye, a consequence of trophic disturbance dependent upon nervous factors. It is possible that the existence of inflammatory factors such as myositis and neuritis or paralytic factors, not always of mechanical or degenerative origin, may by their action upon nerve filaments of the trigeminus or the sympathetic cause increase in tension by irritation and diminution of the same by a paralyzing action, as it were. In the present instance the cystic fluid contained albumen, which fact has been mentioned by Morelli and others and in their cases the cystic fluid was very clear and had not the characteristics which would suggest that it came from a cyst that was not intact. Although the absence of albumen would lead one to consider the possibility of the presence of a hydatid cyst, the fact that a small amount of albumen is found to be present would not justify one in excluding it.

Reports of Societies.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting, October 17, 1905.

Dr. G. E. de Schweinitz, Chairman, Presiding.

SPONTANEOUS DISLOCATION OF THE EYEBALL.

Dr. George C. Harlan exhibited this case. The patient, a female, aged 44 years, presented a history of middle ear disease, followed by left facial paralysis two years before. Nine weeks ago there was severe pain in back of head and neck, after which the eyes became more prominent. The exophthalmos was more marked in the left eye, but there was no evidence of Basedow's disease. While lying in bed, without any exertion, the left eye began gradually to protrude until complete dislocation in front of the lids had been effected. It was reduced without difficulty, but as it recurred the lids were sutured. During examination of the other eye a few days later there was sudden dislocation when the lids were separated. This was also easily reduced. The eye-grounds were normal and no cause could be assigned.

OCULAR COMPLICATIONS OF HYSTERIA.

Dr. Edward A. Shumway reported five cases illustrating the more common ocular complications of hysteria. The first had repeated convulsions, paralysis and spastic contracture of the arm and leg, on one side, and complete hemianesthesia of the paralyzed side. The eyes had been blind during a period of stupor, and at the time of the examination vision was greatly reduced. There were true paresis of accommodation, unimproved by indifferent lenses, and contracted, tubular fields, with achromatopsia on the more affected side. The other four cases were of a milder type, in which the eye symptoms were comparatively more prominent. One, a child, aged 10 years, presented monocular paralysis of accommodation and mydriasis, with reduction of vision on the affected side. The dilatation came on after excitement and recovered completely after four months. The pupil contracted after eserin instillation, proving that no mydriatic had been used at home, and that the mydriasis was paralytic and not spastic. The fields were contracted, tubular, reversed for colors and there was an annular scotoma. The

third case had unilateral mydriasis and paralysis of accommodation, following the extraction of an inflamed tooth. There was partial loss of vision on both sides, most marked on the side of the dilated pupil. Paralysis of accommodation was complete and the mydriasis was not overcome by eserine. The fields were normal. The fourth case showed bilateral reduction of vision, blepharospasm, convergence insufficiency, contracted tubular fields, with reversal for color. The amblyopia had remained unchanged for two years, and was the result of a fright. All four cases showed undue tenderness in the inguinal and inflammatory regions, and, with the exception of the last, presented hemianesthesia of the side most affected in the eye examination. Careful examination of the nervous system was made in each case by competent neurologists. The fifth patient had reduction in vision in each eye with continual sensation of foreign body in the conjunctiva, as the result of a trolley accident one year previously. The fields were contracted and tubular, and the color-fields reversed. In none of the five cases were there any changes in the eye-grounds to account for the loss of vision. Three of the cases showed some tactile anesthesia of the cornea and conjunctiva. Dr. Shumway called attention to the fact that, while amblyopia was bilateral in all the cases, it was most marked on the affected side in each patient who showed hemianesthesia.

Discussion.—Dr. Harlan referred to a case of hysterical amaurosis with dilatation of the pupil immediately relieved by an application of Charcot's magnet, and in a subsequent attack by a wooden magnet simulating that of Charcot. Another case had been apparently blind since a blow from a snowball. The other eye becoming somewhat irritable, he had been advised by a physician to have the supposed blind eye removed. Various tests, however, showed that the patient could see well with the supposed blind eye, and he subsequently recovered his full visual acuity.

Dr. Risley described a case of a young woman in apparently excellent health for whom an iridectomy had been advised by her physician because of supposed blindness and dilatation of the pupil. Examination showed that the pupil contracted to light, that vision was present in each eye, that the visual field was contracted, together with reversal for colors, in the supposed blind eye. Under suggestion, the patient entirely recovered, but subsequently suffered a relapse while en route to her home in a distant city.

Dr. Carpenter had observed tubular fields, reduced vision, dilated pupils and nystagmus in an athletic young man. The patient recovered under general treatment and the nystagmus also disap-

peared. He also referred to another case of monocular blindness which at first had the appearance of hysteria, but which, in a week, presented typical retrobulbar neuritis. He particularly directed attention to the fact that occasionally cases of suspected hysteria were really those of beginning organic disease.

Dr. Pyle recalled a case of unilateral amblyopia, somewhat resembling hysteria and several times diagnosed as such, in a patient affected with glycosuria. Complete recovery followed proper dietetic treatment.

Dr. de Schweinitz reported a case with the following symptoms: Complete unilateral left blindness, which had lasted for a year. The pupil reflex, however, was perfectly preserved. Visual acuity of the right eye was 6/20 and the visual field contracted to 20 degrees and typically tubular, the only color appreciated being red. All ordinary tests proved that the patient could see with the left or supposed blind eye; in other words, there was disappearance of monocular amaurosis during binocular fixation. With the right eye there was monocular diplopia, the images being side by side. The conjunctiva was anesthetic and there was hysterical aphonia.

In this connection Dr. de Schweinitz discussed the investigations of Cruchet on monocular amaurosis. According to him, the amaurosis should be considered in two stages: the first, in which there is complete abolition of monocular vision, and the second, more frequently observed than the other, in which there is intermittent and generally perverted conservation of binocular vision. This author maintains that, in cases of unilateral hysterical blindness, monocular vision exclusively by the good eye is the rule, but at certain moments and under certain conditions the monocular vision of the sound eye becomes monocular vision of the amblyopic eye—that is, there is an alternation. Again, monocular vision may seem to become binocular, but only apparently so. Really it is simultaneous vision—that is, fusion of the images does not take place. Again, the monocular vision becomes binocular vision with the fusion of certain images and not of others—that is, the binocular vision, to use the expression of Antonelli, is dissociated. Finally, under certain other conditions, monocular vision really becomes binocular vision, with complete fusion of all of the images.

Dr. de Schweinitz agreed with Dr. Carpenter that occasionally apparent ocular manifestations of hysteria are really the representatives of organic disease, and that great care must be taken before a positive diagnosis is made. He had seen the case which Dr. Carpenter referred to, and had appreciated the difficulty of the diagnosis between retrobulbar neuritis and hysterical amaurosis. In this

connection he referred to Bergmann's suggestion that just as retrobulbar neuritis may depend upon a primary disturbance of metabolism, so also may hysteria, the unknown toxin working, on the one hand, on the optic nerve, and on the other, on the brain, and his belief that it is possible that the optic nerve disturbance may depend upon vasomotor changes in the opticus. Hysterical edema is well known, and, therefore, it is conceivable that an edema may arise in the optic nerve which would bring about a condition of elevated pressure in the optic fibers, especially in the neighborhood of the optic foramen. He referred to the belief of some authors that some toxin is liberated during the hysterical attack, and that the retina is poisoned, or perhaps the cortical centers, by the toxin, which produces, according to its virulence, a temporary, an enduring, or a long-continued blindness, exactly as this occurs in uremia, in diabetes, and in certain intestinal fermentations. Naturally, if this theory, which, as he pointed out, was only a theory, was admitted to be possible, it would be confessedly difficult to reconcile it with unilateral amblyopia, unless one were willing to admit a selective action of the toxin upon one retina, exactly as very rarely toxic blindness—for example, quinin blindness—is unilateral.

The difficulty of distinguishing between insular sclerosis and hysteria was referred to, and the fact that among the ocular signs of insular sclerosis nystagmus was at one time supposed to be characteristic of this disease and not to be present in hysterical cases. Dr. Carpenter's patient, however, an undoubted hysteric, had exhibited nystagmus, and a number of recent investigations indicate that nystagmus may be an ocular sign of hysteria, especially as it has been shown that it could be developed by suggestion and checked by the same means. So, too, the differential diagnostic point of a central scotoma is not a certain one, inasmuch as Parinaud and others have shown that a scotoma in the center of the field of vision exactly simulating that which is seen in toxic amblyopia and in insular sclerosis, occasionally appears in hysteria. Dr. de Schweinitz had studied a case of this character in the practice of Dr. A. G. Thomson.

Referring to the anomalies of the iris movements, or hysterical pupil phenomena, Dr. de Schweinitz thought that, according to the reported cases, they might be classified as follows: (1) Contraction of the pupil—that is, either spasmodic or paralytic myosis; (2) dilatation of the pupil—that is, either spasmodic or paralytic mydriasis, the dilated pupil in one class of cases responding to light impulse, even if light perception is denied, and in another class of cases failing to contract under the influence of light impulse; (3)

interchange of mydriasis and myosis; (4) unilateral mydriasis, in one class of cases unassociated with paresis of accommodation, and in another class of cases associated with paresis of accommodation; (5) dilatation of the pupil with preserved but sluggish reaction to light and paralysis of accommodation.

At one time neurologists maintained that a differential diagnosis between epileptic and hysterical seizures could be made by observing the pupils, which in the former were wide and reactionless, while in the latter reaction was preserved. The investigation of Karplus, however, shows that pupil immobility may occur during hysterical attacks, and that it probably is a frequent phenomenon in paroxysmal hysteria, depending, in all likelihood, upon a cortical origin, and that, therefore, the pupil signs alone are not sufficient to make a differential diagnosis between two states.

Dr. Shumway, in concluding, gave especial emphasis to the employment of eserine to determine whether hysterical mydriasis was paralytic or spastic.

DISEASE OF THE BULBAR CONJUNCTIVA.

Dr. S. D. Risley presented the history of this case, presumably *tubercular* in character, following severe injury from a blast in the coal mines received in March, 1905. He was first seen by Dr. Risley on July 5. The cornea of both eyes exhibited numerous scars at the site of injuries by small foreign bodies; there was severe pain and photophobia, much thickening of both bulbar and tarsal conjunctiva and a mucopurulent discharge. He was treated as an outpatient without much relief until August 15. Numerous almond-shaped nodules had then formed under or in the bulbar conjunctiva of both eyes extending well back into the fornix. There was some enlargement of a few cervical glands and clubbed finger ends, but no other physical signs of general disease, and the family history was good. The man was admitted to the Wills Hospital, and for a few days his temperature, respiration, and pulse carefully noted without revealing any abnormal variation. He then, August 18, received in the tissues of the arm, 2 minims of Mulford's tuberculin, which was followed in thirty-six hours by pronounced general and local reaction. After the subsidence of the symptoms the eye conditions improved until Sept. 7, when a second injection of 2 minims was given with similar result, and still more marked and rapid improvement in the eyes until Sept. 13, when the man boasted that he could open his eyes and could see the time on the ward clock. Five injections, in all, were given, the last three with diminishing reaction until no symptoms followed the last of 3 minims on Oct. 10.

The nodules had then disappeared, the eyes being quite well. The general health had improved, and the man was discharged from the hospital on October 18.

C. A. VEASEY, M.D., *Clerk of Section.*

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of October 21, 1905.

Dr. David A. Strickler of Denver presiding.

LESIONS FOLLOWING INTRAOCULAR HEMORRHAGE.

Dr. Edward Jackson of Denver showed a case illustrating the lesions following intraocular hemorrhage. The vision in the right eye was reduced to counting fingers at six inches in the lower temporal part of the visual field. It had rapidly become impaired about 7 or 8 years previously, and had been of little use since. There was some haziness in the vitreous and in front of the disc, from which distinct, grayish-white, fibrous bands stretched forward to the periphery of the fundus. At the region of the macula was a patch of black pigment larger than the disc. Above this was a hemorrhage which had occurred within ten days. Still above that, several irregular patches of brilliant white were arranged somewhat as the patches in retinitis circinata. Toward the periphery in several directions were narrow, irregular, light streaks of striate retinitis. The left eye, with lens, had vision of 4/4 partly, and normal fundus.

GUMMA OF THE LEFT UPPER EYELID.

Dr. D. H. Coover of Denver presented this report and case. Mrs. B., aged 28 years, consulted me Sept. 15, 1905. The upper lid of the left eye was then red, swollen and painful. This condition had existed for several weeks previous. On the center of the lid near the margin was a tumor the size of a small hazelnut. It was soft on pressure. There seemed no special induration. On the under side of the lid over the seat of the tumor there was a grayish-yellow spot, just as one sees in a small chalazion. At this point I opened it and evacuated some pus. The tumor diminished. Two days afterward she returned and I found the lid swollen, as it was before opening it. The conjunctival surface over the tumor showed signs of disintegration. It began and continued to break down until a triangular-shaped piece of the conjunctiva, cartilage and skin sloughed away, leaving a cleft 15 millimeters wide and extending upward into the lid 8 millimeters. On her second visit she

stated that she had contracted syphilis from her husband about fifteen months before. She was treated for it and thought she had been cured. I immediately put her on inunctions of mercury. In five days the sloughing process ceased, leaving the cleft as you see it.

Discussion.—Dr. Jackson advised against a plastic operation at an early date, but favored waiting to learn later effects of specific treatment. Dr. Black advised waiting, on the whole, but thought a plastic operation feasible.

LEUKEMIC RETINITIS.

Dr. Coover also reported and exhibited the following case: Mr. S., aged 41 years, consulted me about four weeks ago in regard to his left eye, which had suddenly gone blind in a night. I was unable to get any fundus reflex, and he had only a little light perception on the nasal side. There was no ciliary injection or pain, tenderness or tension. I made a diagnosis of hemorrhage in the vitreous of the left eye. Right eye, vision = 20/20; media clear. The retina had a yellowish tinge, the veins were very large and tortuous, and there were small patches of hemorrhage in the lower part of the retina near the periphery. White streaks showed along the vessels. The attending physician gave me a history of leucocythemia, which he had had for several years. The spleen was greatly enlarged, extending down into the pelvis. There was nothing done for his eyes, but at the request of his physician he was treated daily with the high-frequency current. After two weeks' treatment the spleen became much smaller, the patient felt better, vision began to return to the left eye, the reflex could be seen, and the hemorrhages in the right eye began to absorb. On examination of the left eye, a large hemorrhage was seen bagging downward from the upper and inner part of the fundus at the periphery. The rest of the fundus was not visible.

UVEITIS.

Dr. Coover reported this case, showing the patient: Mr. C. E. S., aged 28 years. On Feb. 5, 1902, I removed the left eye, which had become blind and painful from an old iridocyclitis. At that time I found the vision of the right eye = 20/40, but with —1.00 sph. vision = 20/20. On examining the fundus of the eye, I observed patches of an old choroiditis on the nasal side of the retina near the periphery. At that time he complained of noticing spots before his eye, but I could not detect them with the ophthalmoscope, although I thought the vitreous was becoming fluid, and advised him to secure an occupation that would avoid eyestrain.

Sept. 1, 1905, he called to see me on account of dimness of vision, which was then 20/50. There was ciliary congestion without pain, the aqueous was cloudy, and on Descemet's membrane was punctated exudate, and floating opacities were visible in the vitreous, and the tension was increased. He complained of seeing rainbow circles around lights. This symptom was the first to attract his attention to his eye. He was placed on mercury inunctions, which cleared up the serous iritis, but it had no effect upon the opacities in the vitreous, his vision gradually failing, with an increase of exudate in the vitreous. On September 13 a marked decrease in vision was noticed. I placed him on large doses of potassium iodid without any effect to-day, five weeks later. The opacities are increasing, and vision is rapidly decreasing. He is now able to get about. Family history: His grandmother died of cancer, grandfather of tuberculosis, his father had Pott's disease and died of tuberculosis, and he has three sisters who have tuberculosis. Mother still living.

Discussion.—In Dr. Coover's third and last case, Dr. Jackson advised careful analytical examinations of the blood and urine, looking for autoinfection as a cause for the uveitis.

Dr. Bane said that this case had gone from bad to worse under his care, and attributed the ocular trouble to faulty metabolism. Would now give tonics as indicated by blood examinations.

Dr. Black advised subconjunctival injections of saccharate of sugar, after Fox's method; or large doses of sodium salicylate, after Gifford's method, on the possibility of sympathetic ophthalmia developing at this late date.

Dr. Patterson preferred aspirin to salicylate of sodium.

Dr. Boyd recommended sodium salicylate in large doses, subconjunctival injections of cyanid of mercury, dionin, and examination of the stump, with amputation of its end if found abnormal.

Drs. Stevens and Libby expressed opinion that vision would be lost.

Dr. J. A. Patterson of Colorado Springs reported a case of recurring vertical band of corneal infiltration which disappeared under the administration of aspirin.

Dr. A. C. H. Friedmann of Colorado Springs gave a translation, by himself, of an interesting account of a case of hemorrhage following iridectomy, checked only after four weeks by persistent efforts, recently reported by H. Becker of Dresden.

Prof. J. Hirschberg of Berlin was elected to honorary membership in this society.

GEOGRE F. LIBBY, *Secretary*.

BERLIN OPHTHALMOLOGICAL SOCIETY.

Meeting Oct. 19, 1905.

President Prof. von Michel in the Chair.

Dr. Hamburger showed a case of congenital cataract, around which a brown membrane is visible, representing the ciliary processes.

Dr. Seeligsohn showed a primary syphilitic ulcer of the lid.

Dr. Perlmann demonstrated his new apparatus called Refractometer. In a trial frame which can be adjusted so that each glass is thoroughly centered, there are placed, instead of the lenses of the trial case, two discs containing a variety of small lenses exactly like the disc of Recoss in the common ophthalmoscopes. The inventor claims that sight-testing is a good deal easier, quicker and more reliable with his instrument than with the lenses of the trial case. One of the great mistakes of this instrument which materially affects its ever being used to any great extent is, to my mind, the size of the lenses, which surely interfere with vision and need most careful centering. Besides, it is a very hard task, I should imagine, to clean the lenses when once soiled.

Professor Greeff read a paper on trematodes of the eye (leeches). In examining the eyes of fishes he often discovered leeches in their lens, a disease well known and feared by the fishers of the lakes near Berlin. In the cataract of a fisher which he examined in a fresh condition, he found a shriveled leech, which he now demonstrates, but which can no more be recognized as such. Greeff is sure, though, when he saw it, it *was* a leech, the first one ever authentically found in the human lens. The cases mentioned in literature (Graefe-Saemisch's handbook) he referred to and agreed that they were not reliable.

Discussion.—Professor Hirschberg stated that, 35 years ago, he had written about this disease among the fish, and in the year 1860 a former author had also written on that subject. Nevertheless, he was inclined to believe that the human lens is exempt from leeches, or else they would have been found long ago. Professor Greeff answered that the papers mentioned had escaped his attention, being mainly zoölogical; he pointed out that the leech he found would, then, be a rare case.

Prof. von Michel reported on a case of tetanus. A boy of 16 years had a wound of the orbit. Among other acute symptoms there was exophthalmus and thrombosis of the central artery of the retina. After a few days lockjaw and stiffening of the neck came on and the orbit was eviscerated, also a part of the orbit bone. The

dura mater was normal, but a piece of wood was taken out of the orbit. Puncture of the spinal fluid and injection of serum had no effect, the patient died 5 days after the wound. The diagnosis was verified by injecting a guinea-pig. The autopsy revealed nothing but a slight hyperemia of the meninges. The eyeball showed bleeding in the Tenon cavity and also the fact that the artery had been ruptured, its inner coats being separated. Von Michel finally showed sections of the eyeball with the epidiascope.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

October 19, 1905.

Priestly Smith, F.R.C.S., President, in the chair.

Dr. Edridge-Green read a paper on color systems, and explained how his non-elemental theory was evolved, and how it differed from the elemental color systems of other observers. He assumed that light falling on the eye liberated the visual purple from the rods and thus a photograph was formed. The decomposition of the visual purple stimulated the cones and set up a visual impulse: by it objects were seen monochromatically. The color perceiving center was concerned with the quality of the impulse, and the color system was developed in the following way. When few cells were present in the center, it would only be able to differentiate between the largest and the smallest wave lengths, the red and the violet, and except for these colored ends, the spectrum appeared gray. As more and more cells were added to the center the neutral band gradually diminished until the two colors met in the center, then green was developed, then yellow, blue and orange, and a few individuals were able to perceive a seventh color. Dr. Edridge-Green then showed how inconsistent the elemental theories were with the definite facts of color blindness and these were a necessary consequence of the above theory.

Mr. C. Markus read some notes on a peculiar pupil phenomenon in two cases of partial iridoplegia. The one case was a boy, aged 12, and the other was a woman, aged 32. In both there was a loss of direct and consensual light reflex, together with mydriasis in one eye only, the fellow pupil was normal. In both cases with accommodation, the affected pupil became quite small, and in the case of the woman smaller than that of the other eye. Subsequent dilatation proceeded very slowly, and they took 4 or 5 minutes before regaining their original size. A slight contraction occurred when

the lids were forcibly closed, but a touch on the cornea caused maximal contraction. Accommodation alone caused contraction of the pupil, while convergence had no effect. There was nothing to account for it in either the eye or the general condition of either patient, and the vision was normal; the boy, however, had absence of knee jerks.

A similar observation was made in the case of a medical man who was in perfect health, but one pupil was larger than the other and did not react to light. In another patient suffering from ophthalmoplegia interna, the pupil, though active as a rule, contracted when the patient closed his eyelids.

He explained that a break in the efferent segment of the light reflex arc would account for the mydriasis and inactivity to light in the first 3 cases, and the peculiarly slow dilatation was due to a prolonged after-effect of the stimulus. The pathological condition was discussed, but left as an open question, but it was suggested that it might be an instance of abiotrophy (Gowers).

Mr. S. Lindsay Johnson showed some lenses for spectacles invented by Dr. Tscherning of Paris. Their peculiarity consisted in having one surface forming part of a sphere which had a common center with the cornea, while the other surface was curved to suit the various diopters, identical in power with those of the ordinary trial case.

Owing to their peculiar form, all rays entering from the anterior principal point through the entrance pupil passed through the lens in a direction nearly normal to a tangent to the surface. This resulted in a reduction of the distortion and astigmatism to an almost imperceptible quantity, except in the case of very oblique rays. Mr. Johnson also showed 2 photographs of squares, ruled on a large plane surface: one was taken with an ordinary lens having a diaphragm, corresponding proportionately in size and position to the entrance pupil of the eye; the other was taken with Dr. Tscherning's lens. The improvement in the image, the flatness of the fields, and the absence of distortion and astigmatism was most marked, and he believed that such lenses would be of great value in all cases where high definition and rectilinearity were essential.

Notes and News.

WANTED.—Position as assistant to oculist by an M. D. who is up-to-date on refraction and adjusting eye glasses, frames, etc. Address, Physician, care of this office.

DR. EMIL v. GROSZ has been appointed Professor of Ophthalmology at Buda Pesth.

DR. AUGUST VON ROTHMUND, professor in the University of Munich and the oldest ophthalmologist in Bavaria, recently celebrated his 75th birthday.

A NEW periodical, *The Revista di Triptologia*, has made its appearance in Rome. It deals principally with the prevention of blindness and is edited by Dr. Neuschuler.

VEREINIGUNG NIEDERSACHSISCHER AUGENARZTE is the name of a new ophthalmological society in Hanover, Germany. The president is Dr. Stölting. The Secretary, Dr. Plant.

A CONCOURS DES LUNETTES has recently been held in Paris. A member of the automobile club in that city offered a money prize for the best pair of motor goggles, and by the liberality of other donors the prize amounted to a considerable sum.

THE EYESIGHT OF DUNDEE CHILDREN.—At the annual meeting of the Dundee Institution held recently, Bailie Martin called attention to a part of the Social Union report dealing with the defective eyesight of school children. It was found that nearly 7,000 of the children had more or less defective vision. The chairman, Sir William Ogilvy Dalgleish, said the question of the eyesight of the young was of national importance. In institutions such as the

industrial schools and reformatories, special attention was paid to the teeth of children, but he thought it was even of more importance that their eyesight should be examined. Parents, many of them poor, had not the means, and, he was afraid, very often lacked the inclination, to have this matter attended to. It would, therefore, not do to depend upon the parents; it would be necessary to insist on compulsory examination.

B. M. J.

The oculist-optician controversy seems to be as much alive in the United Kingdom as it is in this country, as the following taken from the *Ophthalmoscope* will show:

The sight-testing optician is clearly an intruder of abiding obstinacy of character. It is now some years since this hybrid medical practitioner came upon the scene, and he is to-day established all over the Kingdom, with many letters after his name, and none under a more or less successful attempt to adorn the spectacle maker's shop with the aloofness and dignity of the medical consulting room. The skill of the sight-testing optician was formally testified to by the shoddy diploma of the Spectacle Makers' Guild. To the undying disgrace of the medical profession many of its diplomas are to this day signed by a member of the Ophthalmological Society. Some years ago, however, a further split took place in the schism, and the result was the birth of the British Optical Association. The work of that body is thus described in a passage from one of their recent circulars, which runs:

"The work of the Association during these ten years has not been without definite result: examinations have taken place twice yearly, scientific meetings and exhibitions arranged, a monthly optical journal is published, and since the inception in 1895, over a thousand opticians have been specially examined and certificated as being qualified to test sight; many of them have taken up higher certificates, showing that their possessors have a knowledge enabling them at once to discriminate which cases require purely optical treatment, and which should be sent to a medical man."

The Optical Association is now attempting to run a bill through Parliament in order to constitute a new kind of hybrid medical man. They ask to have a recognized status bestowed upon their calling in the same way as that conferred upon the dentists in 1878. The fact that candidates are obliged to take out a full medical curriculum and qualifications before being legally recognized as dentists, appears to have escaped the promoters of the optical bill. Do the latter propose to make medical qualification a condition of entrance to the sight-testing world? Otherwise what is the object of citing the case of the dentists as a parallel? However, past experience has hardly encouraged us to look for sound reasoning from the optician who works for a framed and glazed diploma and mystic letters after his name. It is well to keep a wary eye

upon these gentlemen, for they are well organized and know what they want. It seems absurd to imagine for a moment that such a bill as that described will ever pass through Parliament. It is not so very long ago, however, that a great body of hybrid semi-medical practitioners were sanctioned by the midwives' act. In any case, the general medical council should keep a close eye on the proceedings of the opticians, or we may one day wake up to find ourselves saddled with another swarm of self-satisfied vampires.

INTERNATIONAL MEDICAL CONGRESS.—The committee in charge of the International Medical Congress, which will be held in Lisbon from April 19 to 26, 1906, has written asking for the contribution of papers on the following medicolegal subjects, and saying that as yet no titles of communications touching on any of these subjects have been received from this country:

The signs of virginity and of defloration in medicolegal relations.

Hand marks and finger prints; their medicolegal importance.

The medicolegal importance of the *carunculæ myrtiformes*.

The mechanism of death by hanging.

The value of bacteriologic examination of vulvovaginal discharges in the determination of venereal contagion.

The signs of death by drowning.

Ecchymoses in legal medicine.

Spontaneous and criminal abortions from a medicolegal point of view.

Medicolegal investigation of blood stains.

The relations between the seat of cerebral contusions and the point of application of the agent which produced them.

Epilepsy in legal medicine.

The induction of abortion; when is it permissible?

The value of legal medicine in the study of criminal law.

The best legislation for the protection of the "medical secret" (the obligation imposed upon physicians to treat as inviolable all information concerning patients obtained while in the discharge of their professional duties).

The effects of the civil and penal law toward the newborn living infant.

Distinction between the natural openings in the hymen and tears of this membrane.

Criminal vulvar copulation.

Organization of medicolegal services.

If any of the readers of this communication intend to take part in the discussions of this section of the congress, or to prepare papers for it on any of the subjects mentioned, or on any other subject in medicine or surgery, he should inform the Secretary of the American Committee.

RAMON GUIERAS,
Secretary American National Committee, 75 West 55th Street,
New York.

THE OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

CHICAGO, DECEMBER, 1905. VOL. XIV. No. 12, NEW SERIES.

Original Articles.

OCULAR INJURIES.*

BY MELVILLE BLACK, M.D.

DENVER.

A comparatively slight injury to the eye may, through neglect, result in the loss of the function of this important organ. A very serious injury, which surely would prove disastrous if neglected or faultily managed, may be so treated in the beginning as to cause but slight impairment of vision. It is upon these two points that I shall ask your indulgence for a few moments.

In speaking of simple injuries to the eye I shall not include injuries to the eyelids. I shall speak only of simple wounds of the cornea and conjunctiva and chemical and actual burns of these structures.

Simple wounds of the cornea and conjunctiva may be inflicted with sharp or dull instruments or from flying particles of foreign matter. Contused wounds of the cornea from blunt instruments are usually more than simple corneal wounds, because the force of the blow may inflict injury to the interior of the eye. Every wound of the eye calls for rigid aseptic precautions. The eyelids, adjacent skin and eyelashes should be carefully cleansed. If the corneal wound contains a foreign body it should be removed, and care taken to also remove any burned or necrotic tissue from this area; otherwise Nature must throw off these substances by sloughing. In operating upon the part care should be taken not to inflict any more traumatism than is absolutely necessary. It is to be remembered that wounds of the cornea extending through Bowman's membrane leave permanent scars. While this scar may be insignificant in size it may be the cause of an irregular astigmatism that badly damages vision if it is located in the central corneal

*Read before the Colorado State Med. Society, Oct. 3, 1905.

area. Simple incised wounds and scratches of the cornea should not be molested, except to smooth out misplaced flaps, unless they are infected. In this event they should be wiped clean with cotton, wound tightly upon a toothpick with clean fingers, and then painted lightly with pure carbolic acid upon a similarly cotton-wound toothpick. As an additional precaution the conjunctival sac may be filled with 5 per cent. iodoform vaselin or 1/3000 bichlorid vaselin.

No matter how simple a corneal wound may seem to be, it may prove most complicated if it becomes infected, and this is not nearly so impossible as some physicians seem to think. In order to avoid it, the outside of the lids and the lashes must not only be rendered clean, but must be kept clean until the wound has healed.

The eye should be closed with a dry or moist bichlorid dressing. If the eye proves especially painful, the dressing may be removed and iced cloths applied until the pain is relieved. After this the iced cloths may be continued or the dressing reapplied.

This, no doubt, sounds like a rather extensive treatment for so simple a thing as a foreign body on the cornea, but I assure you that if you saw the number of damaged eyes from infection of these simple wounds which I see you would fully agree with me that precaution is necessary. The patient usually does not care to take any chances, and if it is explained to him that there is danger unless these precautions are taken he will readily consent to the inconvenience of having the eye closed until the wound is healed. Usually wounds from foreign bodies and corneal scratches will heal in from 12 to 18 hours. If the eye remains sensitive to light or the wound stains with flurosceine or methylene blue it is not healed.

Burns of the eye I shall only give passing notice. It should be remembered that oil, above everything else, is the one thing to use in a burned eye. Its use should begin as soon as possible after the burn and continue indefinitely in the after-treatment. Castor oil is my preference. Olive oil, if pure, is satisfactory, but I have so frequently found that it causes smarting that I now prescribe castor oil because it causes no inconvenience. Any bland oil which is at hand can be used in emergency until something better can be obtained. Any foreign particles, such as lime or hot metal, should be removed at once, but get the oil in first if it is at hand. Owing to a tendency to the formation of adhesions between the ocular and palpebral conjunctiva, the greatest care and ingenuity must be exercised to guard against them. Despite all efforts, symblepharon may form and later on demand plastic operations for its correction.

Conjunctival wounds, except burns, usually heal kindly. Infec-

tion of such wounds is rare because of the free blood and lymphatic supply.

We now pass from the consideration of simple wounds to the more serious penetrating wounds of the eyeball. The endeavor should be to first get a clear history of how the injury occurred. If the eye contains a foreign body it is important to know if it is rock, iron or some non-magnetic metal, such as copper or brass. After rendering the outside of the eye and the lashes clean, the appearance of the eyeball is noted and the vision of the eye roughly estimated. Any loose foreign bodies or shreds of blood should be removed from the conjunctival sac. The point of entrance, the direction and possible depth of the wound carefully made out. Do not use a probe for this purpose; it is a dangerous instrument.

If the anterior chamber has been opened, the iris is likely to be found caught in the wound, and if it can not be pushed back into the anterior chamber and made to stay it should be grasped with forceps, pulled slightly out and excised. The cut edges can then be pushed into the anterior chamber where they will remain.

If the lens is opaque it means that this structure has been injured and that it may swell and give further trouble.

Every endeavor should be made to combat infection. In my opinion, this is best accomplished by the constant application of iced cloths. Even if the eye is infected, if its temperature is kept low for the first few days after the injury, the activity of the germs carried into it becomes lowered and they may finally become innocuous. If the precaution were always taken, by the physician first called, of cleaning up the eye and then applying iced cloths until expert advice could be obtained, many a useful eye could be saved. If I can make this one point strong enough, *iced cloths for the prevention of ocular infection*, I feel that this paper will have served a valuable purpose.

The physician can often materially assist the oculist to whom a case may be referred by giving the latter a full account of the history of the injury and an accurate picture of the appearance of the eye as seen shortly after the injury. If there is any question about an eye containing a foreign body, an x-ray picture should be taken by an expert in radiography. If the eye contains a chip of iron or steel it should be first located by radiography and then be removed by an expert with the giant or hand magnet. It is very important that an eye containing a foreign body should be seen early by an oculist, if he is to see the case at all. A few days' delay and it may be too late. I have frequently had cases referred to me a week or more after the injury which, I believe, could have been saved if the

foreign body could have been removed within 48 hours following the injury.

Atropin is strongly indicated in all penetrating wounds of the globe, as well as in all infected simple wounds. In the case of ocular burns, alkaloid atropin may, by the use of heat, be dissolved in the castor oil.

In closing, I want to say, as I have said in several papers before, cocain is not a remedy, and under no circumstances is it to be used in the eye as such. It is a local anesthetic, pure and simple. The use of cocain in the eye to relieve pain is absolutely contraindicated because the relief it affords is only of a few moments' duration. If its instillation into the eye is repeated often enough to prolong this effect, in a short time it ceases to produce any anesthetic action whatever. In the meantime the corneal epithelium is all destroyed, Nature's healing process is arrested and the possibilities of infection greatly increased. In short, it serves no good purpose and may do a great deal of harm.

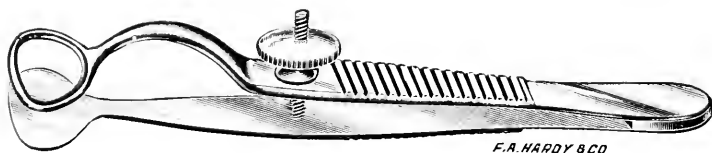
1507 Locust Street.

A NEW MODEL CHALAZION FORCEPS.

LEE MASTEN FRANCIS, M.D.

BUFFALO.

The chalazion forceps, here illustrated, has advantages over the other models in common use, in that the curve in the upper blade is so placed as to permit clamping on the lid without crushing the ciliary margin. This feature eliminates the pain incident to the use of the other models, which, in my experience, was the only seri-



ous objection that could be raised against the employment of forceps in the excision of chalazia. Although the instrument has been in steady use, patients have not complained of pain when it has been applied.

The forceps is made in different sizes, and may be obtained from the Surgical Department of F. A. Hardy & Co., Chicago.

59 W. Tupper Street.

A CASE OF ALMOST FATAL POISONING BY HOMATROPIN INSTILLED INTO THE EYES.

F. C. Hotz, M.D.

CHICAGO.

On Sept. 23, 1905, Dr. P. brought his young wife, aged 22 years, to my office for an examination of her eyes on account of frequent and violent headaches. To suspend the accommodation I employed the same method I have been using for many years: One drop of a 2 per cent. solution of cocain is instilled into each eye and the patient is told to keep the eyes closed for at least two minutes; then one drop of a 2 per cent. solution of homatropin bromid is instilled, to be followed after 15 minutes by a second instillation, the patient keeping the eyes closed several minutes after each instillation. In 30 minutes complete cycloplegia is usually obtained; if not, a third drop is instilled. In this case two instillations were made in the right eye and three in the left, five drops of homatropin being used altogether. The solution had been made two days before and used on patients on the day before and after with the usual result. In this case, however, I noticed the patient's face was unusually flushed, quite scarlet, when she was about to leave the office. I called the husband's attention to it, but thought nothing further about it, believing the lady had probably become unusually agitated during the examination. Further events, however, showed that this facial flush was the beginning of general intoxication which assumed a very grave aspect, as shown by the following reports kindly furnished me by the husband and Dr. von Wedelstaed, who had been called for assistance by the husband.

Dr. P. wrote me as follows: While on the car from your office, Mrs. P. took a severe headache, got very excited and nauseated and could hardly keep from vomiting; it was with difficulty that I got her home, and she vomited occasionally clear mucus and complained of a bursting headache the rest of the evening. About 2 o'clock in the afternoon I gave her a calomel tablet, $\frac{1}{4}$ gr., which she could not retain; I gave her another one two hours later, which was also vomited up. I then gave her $\frac{1}{8}$ gr. morphin hypodermically, which did not seem to ease her much. During the rest of the evening I alternated with hot and cold cloths to her head, and about midnight she seemed asleep and I went to sleep, but was soon awakened by her; she did not seem rational, but after applying cloths, rung out of hot water, to her head for one hour or two she got quiet again and I went to sleep. About daybreak I was awakened by her pulling at me and struggling as though she could not get her breath. I

called Dr. Wedelstaed, whose office is near by. For two hours we worked with her, producing artificial respiration before she began breathing naturally again. She does not remember anything that happened after getting to our room until 9 o'clock the next morning. Retention of urine lasted two days, but bowels were moved easily with magn. cit. I noticed that her thyroid gland was enlarged a day or two later, but lately it became normal again. Pain about the heart is felt often, even when at rest, and any excitement will run her pulse up to 120 to 140 beats per minute.

Dr. W. reported that he was called about 6 a. m.; her condition simulated one of profound syncope, pulse 150, weak and fluttering; respirations, about five per minute. All physical findings were negative; no heart lesion could be detected at the time. Administration of strychnin and nitroglycerin, hot cloths over the cardiac region and artificial respiration kept up for two hours, at which time the patient responded and seemed to rally. The pupils were greatly dilated.

When I reported this case at the meeting of the Chicago Ophthalmological Society I thought it was an exceptional one of an extraordinary idiosyncrasy; but several members present related a similar experience, which would show this unusual sensitiveness to homatropin is probably not quite as uncommon as we think, from the lack of published reports. And, as there are many oculists who instill homatropin every five minutes for an hour (20 to 24 drops) in their refraction work, they may well pause to ask what the probable result might be in a patient like mine in whom five drops almost proved fatal.

INFLUENCE OF THE SIZE OF THE PUPIL IN SKIASCOPY AND A PUPIL STOP.

EDWARD JACKSON, M.D.

DENVER, COLO.

(Illustrated.)

In skiascopy we learn the refraction of the eye by watching in the pupil the apparent movements and form of a light area, moving across the fundus of the eye, in obedience to the movements of the mirror. Accurate measurement depends upon observations made from near the point of reversal. Near this point the light area on the fundus appears enormously magnified, and to give definite indications when so magnified it must originally be very small and definite.

One might say that accurate skiascopy depends upon obtaining a

small and definite light area on the retina. There are various conditions necessary to secure such a small definite light area, and most of them I have discussed elsewhere. (Chapters on conditions of accuracy and exact skiascopy in "Skiascopy and Its Practical Application.") But an important factor in fixing the size and definiteness of this light area, and one that is obvious, but not generally appreciated, is the size of the pupil.

The refraction is never the same throughout all parts of the pupil. The variations in it, which become evident as the point of reversal is approached, give rise to the central and peripheral zones of aberration (the visual zone and the extravisual zone), the well-known scissors movement and the broken-up appearance of irregular astigmatism. These various appearances of the pupil, due to refraction of the rays passing out from the eye, are always striking in skiascopy. They can not be forgotten or ignored. But these same irregularities of refraction operate equally upon the rays entering the eye and prevent the formation of a perfect image—a small definite light area on the retina.

The irregularities of refraction are much greater in the periphery of the pupil than near the center. In most eyes there is a central zone within which they are trifling and unimportant. Their unfavorable influence is reduced to a minimum when the pupil is so far narrowed as to cut off the irregular peripheral zone.

Again, the light area of the fundus is smallest and most definite when the source of light is exactly at the conjugate focus. For accurate skiascopy, the effort is made to place the light source at the focus conjugate to the retina. But the placing is practically never exact, only approximate. We have to deal, not with light perfectly focussed on the retina, but with more or less of a circle of diffusion. The size of this circle of diffusion depends on the size of the pupil. Hence, the narrowing of the pupil renders more definite and smaller the light area on the fundus. Other things being equal, then, the smaller the pupil the smaller and more definite the light area watched and the greater the possibility of accuracy with skiascopy.

But the above considerations are not the only ones that must be taken into account. Most exact skiascopy is only possible in a darkened room, and in the darkness the pupil dilates. For a very large proportion of cases fixedness of refraction and certainty in its measurement can only be obtained by the use of a cycloplegic, and all known cycloplegics dilate the pupil. At best, therefore, the size of the pupil must be reached by balancing conflicting requirements and by avoiding unnecessary enlargement. The following means of influencing the size of the pupil are always worthy of attention:

The pupil may be kept somewhat smaller by working in a room not fully darkened, but, if this is done, so much is lost in other respects that, on the whole, nothing is gained in the direction of accuracy. No such objection, however, can be urged with regard to the employment of a brilliant source of light. The light must not be made larger. But by making it more brilliant the pupil, when not under a mydriatic, will be caused to contract, and accuracy will be increased in every way. Having the patient fix a point close to the source of light as reflected in the mirror, so that the light will fall on a more sensitive part of the retina, has the same effect on the pupil as a brighter source of light.

The pupil may be contracted with advantage by applying the test from a comparatively short distance and having the patient fix the upper edge of the mirror or the surgeon's forehead. In persons who have lost the power of accommodation through age it is generally possible to control the size of the pupil very well by the contraction which accompanies the effort of convergence. Also when accommodation is present the same contraction of the pupil may be secured while determining the presence of astigmatism, the direction of its principal meridians, and even its amount.

When accommodation and convergence give an excessive contraction of the pupil, this may be avoided by testing from a greater distance or placing a convex lens before the eye to diminish the amount of accommodation. The size of the pupil most favorable for exact skiascopy is about five or six millimeters. The test can be applied with a 4-mm. pupil, but only from a short distance and with some difficulty.

In some eyes the results obtained without dilatation of the pupil are not materially more definite than those yielded by the test applied after the use of a mydriatic. But in other eyes the test with a pupil of moderate size fixes so much more accurately the direction of the astigmatism and its amount that it is worth while to employ skiascopy habitually as a part of the preliminary examination before resorting to a cycloplegic. This is also worth doing on account of the time it saves in the subsequent examination, and because it adds to the certainty of the decision that a cycloplegic is or is not required for the particular case in hand.

When the cycloplegic has been used the size of the pupil is no longer under control by physiologic means; still something may be done by avoiding unnecessary dilatation. Some surgeons believe that homatropin dilates the pupil less widely than atropin, and that this is one of the advantages of the former drug for diagnostic purposes. My own opinion is that when homatropin is used so as

to produce full cycloplegia the dilatation it produces is but little less than that produced by atropin. But there can be no question about the power of cocain used in connection with either of the above drugs to decidedly increase the size of the pupil. This is one of the reasons that causes the writer to prefer not to use cocain with homatropin for the diagnosis of ametropia.

When the pupil is widely dilated by a cycloplegie we may, however, exclude the irregular refraction of its periphery by a pupil stop. For this purpose I have employed a piece of metal cut in the form indicated in the accompanying figure. The circular openings in the two ends are, respectively, five and six millimeters in diameter. The bar connecting them serves as a handle. The ring around each opening is only wide enough to effectually cover the periphery of the pupil, its outside diameter being ten millimeters.

In using this little device, the mirror being held to the surgeon's eye with the right hand, one of these openings is held before the patient's eye by the left hand steadied against the brow or temple. It should be placed quite close to the patient's eye. Often it is best held between his eye and the trial lenses that are being used in front of it.



To obtain accurate results it is essential that the opening should be kept in front of the center, or visual zone, of the pupil. If it be held before the margin of the pupil, the purpose for which it is used will be defeated. To keep it properly before the center of the pupil, the outer edge of the metal ring must be kept just within the margin of the cornea. But the most important guide in keeping it in the proper position is the bright point of reflex from the cornea. Before placing the stop one should notice where this point comes in the visual zone that he wishes to leave exposed, and by keeping it in that position in the opening he can be sure that the stop is properly placed.

The stop is but one means of securing accuracy with skiascopy. Unless all other precautions are taken to secure accuracy, it is of no practical value. It makes one more thing to look after, and on that account is worse than useless to one who is not thoroughly familiar with the habitual use of the test. In a large proportion of cases, even where a cycloplegie is used, it affords no material help. But in some cases, after the use of the cycloplegie, it is of considerable value in promoting accuracy.

The practical points here brought forward are: The accuracy of skiascopy depends on the smallness and brightness of the light area. The irregular astigmatism that exists in the periphery of the dilated pupil of every eye blurs and extends the retinal light area. Hence, even where a cycloplegic is to be used, it is worth while, first, to apply skiascopy with the pupil undilated, especially to determine the principal meridians and amount of astigmatism.

Without a mydriatic the size of the pupil can be controlled through brightness of the light used, fixation of the patient's gaze close to the light, and convergence of the patient's visual axes.

After instillation of a mydriatic the bad effects of peripheral irregular astigmatism may be avoided by use of the pupil stop.

A NEW ADVANCEMENT FORCEPS.

MARK D. STEVENSON, M. D.

Oculist in City Hospital of Akron, Ohio.

AKRON, OHIO.

(Illustrated.)

Much of the pain experienced during an advancement operation is due to the manipulation of the forceps. If, as is usual, the blades are attached at an obtuse angle to the handle, it is difficult for the operator to move the handle without unduly pulling one side of the muscle or tendon, because such a movement must be in a circular direction, and also since the handle always lies in a direction different from that of the muscle being operated upon. If not



supported by an assistant, the long, often heavy, handle of most forceps acts as a lever, the eyeball, lids or speculum serving as a fulcrum, which, rotating, pulls the muscle and so causes pain.

The forceps illustrated are curved on the flat, so that the end of the handle, which is short, may be supported by the nose, speculum or temple, while the middle portion curves over and does not rest on the eyeball or lids. The blades are at right angles to the handle, making the forceps easier to manipulate, as the handle may be moved in a straight line and thus not pull one side of the muscle

more than the other. The forceps are also so made that when the blades are closed they become locked and hold the tissues securely. By pressing the handle still more the blades are released and the forceps may be removed. This is quite an advantage over the varieties where some sliding catch must be operated in order to release the forceps, the catch often being moved with more or less difficulty, causing pain. These forceps are easily opened only when some tissue is grasped between the blades.

This instrument is made by F. A. Hardy & Co., Chicago, Ill.

EXOPHORIA.—W. H. Roberts, Pasadena, Cal. (*Journal A. M. A.*, August 12), finds that a troublesome degree of exophoria can be corrected by systematic exercise with prisms. He begins with weak prisms, bases out, rapidly increases the strength, and has the patient's attention drawn to a point of light six meters distant. He interposes himself between the light and the patient, holding a ruler at first fourteen inches in front of the eyes and backs gradually toward the light, and when he reaches this he suddenly exposes it. If the light appears single after the transfer of the gaze to it, he has the patient look steadily at it for a few seconds; then, after closing the eyes for two or three seconds, if it still appears single on opening them, he goes through the exercise again with stronger prisms. He usually adds one or two degrees each time till 25 or 30 degrees are readily overcome. After the exercise, the patient should rest with closed eyes until somewhat recovered from the excessive convergence. He supplements the office exercises by giving the patient a pair of 8 or 10 degree prisms in a properly fitting straight frame, with or without distance correction. He has him practice with these for about ten minutes morning and evening till the light can be fused at once, at a distance of six meters. As the muscles strengthen, once daily will suffice. It may be necessary to increase the strength of the home prisms two or three times, according to the results obtained. The treatment should be persisted in till the Maddox rod shows from $1\frac{1}{2}$ to 2 degrees of esophoria for distance, and the von Graefe test shows orthophoria for near. It is well to advise the patient that moderate exercises will be needed for an indefinite period after the treatment to keep the muscle power gained. He reports a number of cases illustrating his method and its results.

Reviews.

MY THIRD TRIP TO AMERICA.

J. HIRSCHBERG.

[Translated and Abstracted by Arthur Friedman, M.D., of
Colorado Springs, Colo.]

If a man like Hirschberg gives us his impressions of a country, we must try to read them with more consideration than we would the writings of a younger or less experienced man. His views are very outspoken and seem often rather too exclusively meant for the benefit of his German readers whom he naturally addresses. He tells of his invitation to the United States, and especially to the Portland meeting of the A. M. A. In selecting an address to the Ophthalmologic Section of the A. M. A., he chose a subject from a theoretical chapter of medicine in order to demonstrate the error in believing that in the "Empire of the Dollar" only practical subjects were able to fascinate the audience, and he is pleased to report that his expectation did not deceive him. His paper was received with the greatest attention. The reading took, as he mentions, about fifty minutes, which would be two and a half times more than provided by the by-laws of the section. He then gives us a very minute and interesting description of his trip through the states, reminding one almost of the triumphant journeys of the old Cæsars, everywhere welcomed, dinners, speeches, automobile rides, etc. There is hardly one name missing from the list of the great oculists of the country; all came to extend the glad hand to the distinguished guest from across the sea. Of great interest was the discussion among these men, dining at Delmonico's, concerning the existence of an American school of ophthalmology; the question was answered in the negative by all present, including Hirschberg. "The United States has not yet produced men like Graefe, Helmholtz or Donders. There are excellent oculists in America, many of whom emigrated from Europe, especially from Germany; the routine in ophthalmology does not differ materially from the European, the scientific research moves in the same paths and is—though very much younger—almost in line with the old country. Certain excrescences of very few American oculists in refraction and muscle work do not justify in speaking of an American school in opposition to the European."

There follows now a short résumé of the American history of ophthalmology, the study of which is to be recommended to every oculist, taking it for granted that the history of medicine is—and most unjustly so—a badly neglected branch of our science. I would not even attempt to give an excerpt of the author's most interesting description of his trip through the states, but prefer to ask his permission to translate the whole of it into English. In Portland he was presented to the first general meeting of the A. M. A. and said: "I claim one honor, that of being the only European oculist who has made his third trip to this country; so you see I enjoy America."

Very characteristic is his opinion of the A. M. A. He considers it just the right kind of organization, while he thinks that it would not work well in Germany, where a more severe control of ethics would have to be one of the chief duties of such a society. After a review of the excellent work done by the Ophthalmologic Section, he continues the description of his voyage through California and Colorado to Chicago and from there to Boston and New York.

The question of what he thinks of America, the author answers by giving a complete history of the development of the American colleges and universities, comparing them favorably with the corresponding institutions in Germany. His closing remarks are typical of a German patriot: "Beware of becoming Americanized in science at a time when the better Americans like to become Germanized. Friendly relations will always exist and should increase and prosper. I advise every colleague in my specialty not to emigrate to America if he can help it. I recommend to every oculist who can afford it to take a trip to America in order to widen his horizon. Fewer emigrants and more visitors, that seems to me the best for the welfare of my fatherland."

OPHTHALMOSCOPIC APPEARANCES OF A CASE OF PERIVASCULITIS OF THE RETINA AND CHORIOID.

T. D. MEYERS, M.D.

[Reviewed by Frank E. Brawley, M.D., Chicago.]

Dr. Meyers¹ describes the case of a young woman, now 20 years of age, whom he has had under observation since 12 years of age. When first seen he prescribed glasses for some discomfort which she experienced while doing school work. The error of refraction was a compound hypermetropic astigmatism, with regular axes in both eyes. At that time her fundus picture was normal.

1. *Ophthalmoscope*, December, 1905.

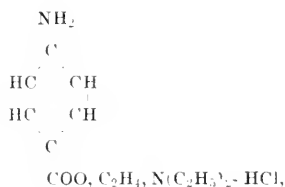
After suffering for several months with influenza, tonsillitis, etc., and after having tonsils and adenoids removed, she presented herself to Dr. Meyers in January, 1905. Her eyes felt uncomfortable and strained after use, especially for sight-seeing and shopping. Her vision was normal in each eye. Her family history showed presences of gout; she was losing weight and was always tired. Her legs were boggy above the ankles. Polyuria was present and she was obliged to rise at least once each night to urinate.

Examination of her urine had been repeatedly negative, but in May a trace of albumin was found, but no casts. The heart sounds were normal. At this time her fundi were again examined and presented the appearance of advanced perivascularitis. The lymph channels of the arteries are everywhere varicose and in places, especially in the periphery, the lymph channels are seen distended, without very visible arteries in their neighborhood. At the discs the white striae show an almost solid white mass, gradually fading off into the surrounding retina. Excellent plates accompany the article, and were made from Miss Washington's paintings of the eye grounds.

The treatment consisted of divided doses of calomel and drachm doses of Basham's mixture three times daily. In a short time there was a striking change in the fundus appearance, the lymph stasis was very much lessened, although still seen about the disc. Dr. Meyers' theory is that the condition was a gouty exudation into the retinal lymph channels.

NOVOCAIN, A NEW ANESTHETIC.

In the *Therap. Monatshefte* for November, 1905, a new local anesthetic is described and recommended by Braun. It is called novocain and chemically is the chlorid of p-aminobenzoyldiethylaminoethanol



and crystallizes in small needles which have a melting point of 156 degrees C. It is easily soluble in an equal weight of water and in 30 parts of alcohol. There is no irritation from its use even in concentrated solution, and the cornea will stand the powdered

drug. Intravenous injection of 0.15 to 0.2 gm. per kilo in rabbits caused reduction of blood pressure and respiration without influencing the peripheral vessels.

Novocain is very much less toxic than either cocain or stovain. The anesthesia is so short, however, that it can not of itself entirely displace cocain. A lengthy anesthesia may be obtained by addition of one of the preparations of the suprarenal gland.

There were no toxic or irritating symptoms from deep injections, but in spinal anesthesia, although the results were good, its use was followed by headache and meningeal irritation. It is recommended by Prof. Dr. H. Braun in the *Deutsche Med. Wochenschrift*, 1905. No. 42, p. 1667.

BRAWLEY.

SUBCONJUNCTIVAL SALT INJECTIONS.—S. D. Risley, Philadelphia (*Journal A. M. A.*, August 12), reports his personal experience with subconjunctival salt solutions which are, he says, always innocuous and often markedly beneficial in various pathologic eye conditions. Illustrative cases are reported of its use and value in corneal abscess, keratitis, hemorrhage and suppuration of the retina, etc. The mode of its beneficial action, Risley thinks, is through the well-known protective influence of the serum albumin poured out into the aqueous humor. It is probable the injection of neutral saline solutions of low specific gravity dilates the clogged channels of exit and dilutes their contents, thus hastening the flow of the lymph and albuminoid substances through their normal channels, and that this fluid is replaced by a fresh supply still richer in albuminoid substances carrying a fresh nutritive supply to the tissues. Recent observations have led him to think that similar good effects can also be produced by the prolonged application of saline stupes at body temperature directly to the conjunctival sac.

PHYSICIAN GETS DAMAGES.—Dr. Eugene Smith, Detroit, was awarded \$1,500 damages in the United States Court at Trenton, N. J., November 29, for injuries received by being thrown from a berth on board the steamer *Vaderland*, belonging to the International Mercantile Marine Company.—*Jour. A. M. A.*

BEQUESTS.—The late Mr. William Ferguson, Baltimore, by will left residuary bequests of \$5,000 to the Presbyterian Eye, Ear and Throat Hospital to aid aged mechanics or members of their families unable to pay, and \$10,000 to the Hospital for Consumptives for the benefit of impecunious consumptive mechanics.—*Jour. A. M. A.*

Reports of Societies.

SECTION ON OPHTHALMOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting, Nov. 21, 1905.

Dr. G. E. de Schweinitz, Chairman, presiding.

CONCERNING THE PATHWAY OF CERTAIN POSTOPERATIVE INFECTIONS.

Dr. G. E. de Schweinitz and Dr. C. M. Hosmer (by invitation) reported the results of microscopic examination of an eyeball which had been removed on account of iridocyclitis following cataract extraction, the infection having first appeared on the fourteenth day after the operation. For eight days following the extraction there was no sign of trouble, the wound being closed and the eye in excellent condition. On the afternoon of this day the wound reopened without traumatism, was closed on the following day, and for five days the eye gave no sign of abnormality in the healing process. Then, after severe pain, slight infiltration of the lips of the wound appeared, associated with marked iridocyclitis. In spite of the most vigorous treatment, at first followed by good results but later by violent relapse, the inflammation continued, and about a month later the eyeball was enucleated.

Microscopic investigation revealed the lesions of intense iridocyclitis, with dense infiltration of the ciliary body and iris with round cells. In a position posterior to the iris and proceeding from a small fragment of retained cortex, a fillet of lens capsule could be traced all the way across the chamber into the wound and up to its very margin. The fillet was surrounded by a mantle of small, deeply-stained round cells, and evidently had acted as a drain or pathway along which the infecting material had proceeded. The patient had had lachrymal obstruction, but prior to the operation this had been entirely or apparently entirely relieved by suitable treatment. The authors discussed the subject from the standpoint of their own investigations, and those of others, particularly Wangenmann's examinations of the causes of late infection by filtration through permeable operation scars, or imperfectly closed operation wounds. Incidentally they also discussed the various methods of opening the capsule and avoiding the inclusion of particles of capsule or cortex in operation wounds.

Discussion.—Dr. Posey called attention to the fact that prolapse

of part of the capsule into the lips of the wound had other dangerous qualities, and recalled Treacher Collins' observations of glaucoma following operation, where a portion of the capsule was found entangled in the wound and the angle of the anterior chamber closed by the traction made by the strand of capsule. Dr. Shumway stated that Hirschberg reported good results in late infection from cauterization and removal of the exudation from the anterior chamber. Dr. Ziegler did not think cauterization was indicated at the first rupture of the wound unless the infection was evident and continuous from a regurgitating tear duct. He thought that capsular filaments were more often incarcerated in the corneal wound after discission than after cataract extraction. While he made a V-shaped incision in secondary capsulotomy, he preferred in primary cataract an incision resembling the Greek letter pi, consisting of a vertical incision on either side of the pupillary area, connected on the top by a horizontal incision, a very sharp cystotome being used. The flap thus made falls down to the bottom of the anterior chamber, and so frees the wound of capsular shreds. Dr. Sweet cited a case of infection occurring twenty hours after iridectomy for acute glaucoma which followed needling of capsular cataract eight days previously. At the time of the discission preliminary iridectomy was performed on the other eye. He believed that the infection was due to the germs which gained access to the anterior chamber through the corneal wound after the discission. Dr. Hansell believed that in late infections the possibility of the trouble arising from other organs should not be forgotten. Several years ago he reported a case of panophthalmitis, which was clearly traceable to purulent cystitis. Dr. Risley thought that the subject of auto-infection was worthy of serious consideration. In a case of failure of the incision for cataract to heal, he found a shred of capsule in the wound which was cut off, and healing promptly followed. If a broad conjunctival flap is made, the rapidity with which the wound closes might neutralize the effect of a small shred of capsule caught in the wound.

In concluding the discussion Dr. de Schweinitz said that in the treatment of the patient, which he had not given in detail, all of the approved methods, including cauterization of the wound, had been tried. On the day on which the wound had opened, and before any of the symptoms of infection had appeared, there had not seemed to be any reason for cauterization, as such an accident was not an uncommon one after cataract extraction. He doubted, however, if it would have made any difference in the ultimate result of the case had the wound been cauterized immediately after the chamber opened. He agreed with Dr. Hansell that occasionally infection

might come from other sources than those immediately surrounding the eye, or, in other words, be derived from the body generally, but thought that all investigation showed that in the majority of cases perosity of the operation wound through which the infecting material leaked accounted for these late infections.

OCULAR INJURIES FROM GLASS AND STONE.

Dr. William M. Sweet reported one case of glass in the ciliary region, and one case of three small pieces of stone in the lens. In both instances the situation of the foreign bodies was located by the *x*-rays, and the particles removed by forceps in the first case and by a lens scoop in the second. Experiments were made to show the resistance of such substances as glass, stone, cement paving and anthracite coal to the passage of the rays. Particles of these materials were placed on a half-inch board and exposed to the rays. With the exception of coal, the various materials gave shadows upon the plate of about equal density. The shadow of anthracite coal was so faint as to preclude localization of this substance if in the eyeball. Additional experiments were made with small pieces of glass placed at the inner canthus of the cocaineized conjunctiva, and the rays passed through the nose and eyeball. In every instance a shadow of the glass was secured on the plate at the side of the head if the exposure was not too prolonged, and the tube was placed to shadow the body free from the dense portions of the orbital walls. He believed that, while it was not possible in an individual case to positively state that the eyeball did not contain a particle of the glass or stone inflicting the injury, in many instances a shadow of the substance could be shown on the plate if several sets of radiographs were made, in the attempt to shadow the anterior segment of the globe in front of the dense bones at the external orbital margin or of other portions of the eye through the thin bone forming part of the external wall of the orbit. As the distance of the orbital margin back of the center of the cornea varies in different individuals, amounting to as much as 20 mm. in some cases, it will often be possible to secure a shadow of the entire anterior half of the eyeball free from the dense bony shadow of the external wall.

CHANCER OF THE EYELID WITH INTERSTITIAL KERATITIS.

Dr. John T. Carpenter reported the history of a man, aged 27, who had chancre on the left lower lid on June 1, 1905, which was mistaken by his physician for an abscess of the lachrymal sac and freely incised at the inner canthus. When seen by Dr. Carpenter on July 19, the development of an ulcerated area covered with gray

membrane on the lower lid with sharply-defined rim beyond which was an area of induration, together with swelling of the submaxillary and pre-auricular lymphatics, led to the diagnosis of chancre of the lid, which was confirmed by the early appearance of marked secondaries. The infection followed some saliva coughed into the eye by a friend who was known to be suffering from extensive mucous patches and chancre. This was followed in two weeks by irritation with swelling at the inner canthus. Under mercurial inunctions rapid and continued improvement resulted in complete cure with very little loss of tissue. A still more interesting complication was the development of interstitial keratitis about five months after the chancre had made its appearance. The question of diagnosis of chancre of the eyelid was discussed at length and the importance of the induration and associated lymphatic involvement was emphasized. The differential diagnosis must be made between hordeolum or chalazion at the inner canthus associated with great swelling of lids; lachrymal abscess; syphilitic ulcers or broken down gummata; chancroid; lupus; tuberculosis and epithelioma. The clinical history of this case shows, in his opinion, the necessity of including interstitial keratitis among the lesions of acquired syphilis.

Reference was made to the five cases reported by E. Treacher Collins in which chancre of the eyelid was followed by interstitial keratitis affecting the eye which had been the seat of the primary sore. In all of these cases, as in the present instance, the opposite eye had escaped the corneal involvement.

Discussion.—Dr. Posey was inclined to think that secondary and tertiary ulcers were scarcely less uncommon than the primary sore. He recalled a case of syphilitic ulcer of the eyelid, which he had presented before the Section in 1901. In this case, the ulcer had involved the outer half of the lower lid and had entirely destroyed the margin of the lid. He said that these ulcers may be preceded either by a gummatous infiltration of the lid, which may resemble a sty, or the initial process may take the form of small prominences, like chalazia.

Dr. de Schweinitz, discussing Dr. Carpenter's paper, said that on two other occasions he had seen a chancre of the eyelid. One had occurred in the Philadelphia Hospital, the chancre occupying the inner portion of the lower lid of the left eye and extending to the bulbar conjunctiva. Unfortunately, the patient eloped early in the treatment of the case, and the subsequent history of the case was absolutely unknown, and, therefore, he was unable to say whether, as in Dr. Carpenter's case, any involvement of the cornea had followed. The second case he saw only once in consultation with an-

other doctor, and believed that the lesion was a primary syphilitic sore, only because he had been informed that it rapidly yielded to mercurial treatment. The subsequent history of this case he was also unable to give, and also unable to state with positiveness that the ulcer should be classified as a primary sore, because sometimes, as Dr. Harlan had shown, syphilitic ulcers occurred upon the eyelids, probably as the result of broken-down gummas, which naturally would disappear under antisyphilitic treatment.

Dr. Risley had seen in his experience only one case of primary chancre of the eyelid, and was unable to recall a single case of interstitial keratitis that could be with certainty traced to acquired syphilis. He thought it was difficult or impossible to prove that in subjects of acquired syphilis there was not also hereditary syphilis. Instances of unilateral interstitial keratitis were rare. It should be remembered that many years may elapse before the other eye is affected. Dr. Zentmayer referred to a case in the clinic of the late Dr. Norris, in which there was no glandular swelling, although the ulcerated growth on the lid ultimately proved to be a chancre.

TRIANGULAR OPACITY IN THE SUPERFICIAL LAYERS OF THE CORNEA.

Dr. Wm. Campbell Posey showed two cases of triangular opacity in the superficial layers of the cornea, occurring in syphilitic subjects. The first case occurred in a lad of 17, the subject of congenital syphilis, and developed during the course of an ordinary interstitial keratitis. The second case was that of a colored woman with specific uveitis and secondary glaucoma. The opacity occupied the lower portion of the cornea in each instance, with its apex near the pupillary center and its base at the limbus of the cornea. When viewed under a high magnifying power, the opacity was found to reside in the epithelial and subepithelial tissues, being sharply defined from the rest of the cornea by a somewhat elevated ridge of demarcation. These triangular areas were avascular, and seemed to be made up of proliferated epithelial cells which had undergone calcareous change.

Dr. Posey said that not very dissimilar changes in constitution, though differing in form, have been remarked in the superficial structures of the cornea in other parenchymatous affections of that membrane, as, for instance, in keratitis disciformis and ribbon-shaped keratitis; and he thought that the opacities in the cases just reported by him might be explained, as in these latter instances, by a change wrought upon the epithelial and subepithelial cells by the fluids of the inflamed uvea in general, but particularly of the substantia propria of the cornea itself. He surmised that the triangu-

lar form of the opacity could probably be accounted for by some peculiarity in the circulation of the cornea, either vascular or lymphatic. He pointed out that it is a matter of clinical experience that in many cases of commencing keratitis the cornea frequently becomes infiltrated in localized areas, and recalled the fact that von Michel attributed the localization in these opacities to a syphilitic affection of the marginal loop of blood vessels.

TUBERCULAR KERATITIS.

Dr. Posey presented, also, a case of supposed *Tubercular Keratitis*, occurring in a colored boy. The keratitis took the form of an infiltration of the interstitial lamellæ of the cornea of one eye, with a number of yellowish-white oval areas, which were separated from one another by clear corneal tissue. The case had been under observation for three weeks, and, although the ciliary injection and other signs of marked uveitis which were present when at first seen had subsided, the corneal condition had remained practically unchanged. He proposed using tuberculin, for diagnostic as well as therapeutic purposes.

BUPHTHALMOS.

Dr. Posey presented, also, a case of *Buphthalmos*, occurring in the right eye of a girl 11 years old; the condition had dated from birth. The diameter of the cornea was 17 mm. The lens had been dislocated, and could be seen lying back of the iris below, having undergone calcareous change. There was a deep excavation in the head of the nerve, with marked signs of degeneration in the chorioid and retina.

Dr. E. A. Shumway demonstrated: (1) A case of *Dendritic Keratitis* associated with malaria, in which the malarial organisms had been found in the blood. There was marked eyelitis, and the corneal ulceration had existed for three months. (2) A case of *Interstitial Keratitis Due to Acquired Syphilis*.

Discussion.—Dr. de Schweinitz, discussing the cases of interstitial keratitis exhibited by Drs. Shumway and Posey, referred to the fact that the interstitial keratitis of acquired syphilis was more frequent than had once been supposed to be the case. His experience agreed with that of those observers who in recent times had shown that this disease was usually a late secondary or a tertiary event. It may be circumscribed or diffuse, and was more apt to be unilateral than the variety due to inherited syphilis. Its evolution was relatively more rapid, and it was more promptly amenable to treatment. He referred to a number of cases that he had seen de-

velop as an undoubted manifestation of inherited syphilis, all of whom had been adults between the twentieth and fiftieth year of life.

MEMBRANOUS OCCLUSION OF THE PUPIL.

Dr. S. Lewis Ziegler exhibited two cases following cataract extraction, seen by him at the Wills' Hospital, in which he had successfully performed his operation of V-shaped iridotomy. The operation was performed with a modified Hays' knife-needle, puncture being made at the upper margin of the cornea, and the point of the knife carried to the lower part of the anterior chamber and swung 2 mm. to the left of the vertical meridian. Counter puncture was made in the iris membrane, and the incision carried up through the membrane to the point of entrance. As this opened up to an oval the knife was swung up through the opening and again passed across the anterior chamber to a point 3 mm. to the right of the vertical meridian. Counter puncture was again made in the iris and the incision carried up to meet the first at the apex of the triangle. The traction of the tissues caused the flap to recede, making a triangular pupillary opening.

The advantages of this operation are the absence of traction on the ciliary body, the avoidance of opening the anterior chamber, especially in cases of fluid vitreous, and the ease of manipulation. The possible causes of failure are premature escape of aqueous humor, allowing the tension to drop, excess of knife pressure made by the operator, and failure of the membrane to retract owing to its great stiffness. In the latter case an incision can be made through the cornea below and the stiffened flap drawn through and cut off with iris scissors.

The resultant vision in one of these cases was 20/40 and in the other 20/20.

LEUCO-SARCOMA OF THE CHORIOID AND CILIARY BODY.

Dr. G. E. de Schweinitz, and Dr. C. M. Hosmer (by invitation), gave the results of the examination of the eyeball of the patient, a man aged 57, which had been removed on account of a sarcoma, that was found to spread from the chorioid far forward, arising in the layer of the larger blood vessels, and to involve the ciliary body as far as the roots of the iris. Pigment was entirely wanting, and the growth was, therefore, a leuco-sarcoma. It was of the mixed cell type, most of the cells being of the small round variety. A few were distinctly spindle-shaped, and in places there were alveolar spaces containing large round and oval cells. Prior to enucleation, ophthalmoscopic examination had revealed not only a detached

retina, beneath which lay the sarcoma, but in the macular region an elevation presenting the characters of an exudate, covered on its surface by collections of irregularly shaped black masses, somewhat resembling pigment cells. Microscopic investigation proved that this elevation was composed entirely of an albuminoid material, which lay between the chorioid and the retina and that the black, cell-like bodies which had been seen with the ophthalmoscope consisted of collections of the retinal pigmented epithelium. Thus far there had been no sign of a recurrence of the growth, eight months after the removal of the eyeball.

A CASE OF DOUBLE PERSISTENT HYALOID CANAL.

In reporting this case, Dr. H. F. Hansell stated that in the majority of cases a string-like tissue is seen through the ophthalmoscope running from the retinal artery on the papilla in the axis of the vitreous to the posterior surface of the lens, dark or gray in color, sometimes containing blood, more frequently not, and slightly changing form with every movement of the eye. It may be complete as in this patient's left eye, or partial as in his right eye. In both eyes it is attached at one place only and that the lower nasal quadrant of each lens. Usually it terminates by a number of small branches at or near the posterior pole. A peculiarity that Dr. Hansell has never seen except in this case is that on the right side no trace of its posterior extremity can be found. In most instances preservation of the canal is only a part of extensive pathologic changes, such as vitreous opacities, dislocated lens, patches of atrophied chorioid, retinitis pigmentosa, coloboma of the lens or uveal coat, connective tissue changes in the interior of the eye and microphthalmos. In speaking of the diagnosis of true hyaloid artery from Cloquet's canal, von Hippel says (Graefe and Saemisch, second edition): "A large number of cases have been described in which it appears to me the diagnosis was not justified. Among them are those cases in which a vessel runs out from the papilla a short distance into the vitreous and then turns on itself to be continued on the retina as an artery or to disappear into the papilla. The returning part often winds itself about the outgoing part. That the latter partakes of the character of a vein has not as yet been proven. The origin and significance of this tortuosity have not been explained. The normal arteria hyaloidea never shows such a course and a vena hyaloidea is unknown."

THE SYMPTOMS OF AMETROPIA.

Dr. Howard F. Hansell called attention to the difficulties in the way of determining the value of corrections of optical defects in the

cure of the manifold reflexes attributed to ametropia. Are the reflex symptoms under consideration in any given case due to eyestrain: is the coincidental disappearance of extraordinary reflexes due to wearing glasses: are the symptoms dependent upon errors of refraction or upon loss of muscular equilibrium, are questions that can only be answered after careful study of each individual case and can not be prognosticated. The controversy between ophthalmologists and neurologists is unfortunate and arises in part at least because the so-called functional diseases of the nervous system are seldom seen by the oculist in their early stages, but only after they have become confirmed and have lost their functional character. It is a mistake for clinical writers to publish only their successes. The record of failures would be equally valuable. The expression of eyestrain assumes many forms, controlled or modified by the impressionability of the high centers and the degree of responsiveness of the muscular and vascular systems. The situation of the reflex and its character are individual and may be ascribed to inherited or acquired personality. Astigmatism in one individual gives rise to headache, in another to facial chorea, and in another to vertigo, according, not to the degree or axis or kind of astigmatism, but to individual characteristics which, in turn, are dependent upon heredity or environment.

Discussion.—Dr. de Schweinitz agreed with the views which Dr. Hansell had announced. He believed that it was unquestionably true that fully 60 per cent. of functional headaches depended upon anomalies of refraction, accommodation and motility of the eyes, and that the interpretation of eyestrain included many symptoms not necessarily suggesting that the eyes themselves were at fault, for example, all manner of headaches and vague pains, vertigo, nausea, pseudo- and habit-chorea, neurasthenia, hysteria, so-called gastric troubles, tachycardia, indigestion, night-terrors, etc. He deprecated, however, the tendency in some quarters to exaggerate the subject. Such exaggeration was apt to lead to distrust among general practitioners and cause them to fail to bring to proper eye examination the very cases that required it. He insisted on the necessity of examining for and finding the smallest degrees of astigmatism, and providing suitable lenses in all of these cases, but also insisted that this should in no sense lead to neglect of general examination and a search for other probable causes of the so-called reflex symptoms. He referred to the ease with which symptoms might be suggested to nervous and neurasthenic patients, and to the danger of over-enthusiastic practitioners attributing to ametropia all cases of so-called reflex phenomena, because sometimes in indi-

vidual instances cure had followed the adjustment of glasses. He agreed most thoroughly with Dr. Hansell that the most painstaking investigation of ametropia, and of muscular imbalance should always be made, but never to the exclusion of general examination and the investigation of other organs from the anomalies of which these symptoms not only might arise, but often did arise. It was only by such thorough investigation that the best therapeutic results could be obtained. Dr. Pyle considered it the duty of the ophthalmologist to exhaust every means at his command to discover, if possible, an ocular element in the cases referred to him. Without such mental attitude and proper faith in his work, the important finer errors of astigmatism might escape detection. He thought that the specialist in ophthalmic work should take every opportunity to call the attention of the general profession to the beneficent results of the proper correction of ametropia. He failed to see what possible harm could follow legitimate emphasis of such claims. Dr. Turner believed that prolonged rest and not glasses was often the treatment required. Dr. Carpenter cited a case of epistaxis relieved by glasses, and which recurred when the lenses were broken and not worn for several days, to show how preposterous it would be to claim that glasses should be employed to cure epistaxis.

ACUTE RETROBULBAR NEURITIS PROBABLY DUE TO SINUSITIS.

Dr. William Zentmayer gave the history of a colored female, aged 27 years, single, cook, in whom vision began to fail four days previously, accompanied by severe retrobulbar pain and left-sided headache. She gave a history of two attacks of inflammatory rheumatism. Vision—fingers at 18 inches. Pupil partially dilated and scarcely responsive to light. Small candle field extending outwardly from temporal side of fixation. In the affected eye there was enormous distention of the retinal veins with intense striation of the retina. In the other eye the veins were slightly enlarged. Physical examination negative. Nasal examination showed frontal and fronto-ethmoidal sinusitis. Rapid subsidence of pain and venous engorgement under intranasal treatment and the internal use of atropin and iodids. Six weeks later, eye blind and disc white.

WILLIAM M. SWEET, Acting Clerk of Section.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of Nov. 18, 1905.

Dr. Edward Jackson, of Denver, presiding.

VERNAL CONJUNCTIVITIS.

Dr. W. C. Bane, of Denver, showed a case of vernal conjunctivitis in a lad 6 years of age. He had been treated for trachoma for about 18 months, the lids being rolled in December, 1904, by an eye surgeon from Cincinnati, without a particle of benefit. The disease has been confined mainly to the tarsal conjunctiva, which contains the typical hard pavement granulations, being more marked on the right upper lid than the left. The corneæ have been clear. The patient came under Dr. Bane's care in June last, at which time there was considerable photophobia and mucoid secretion. During July and August he was in Nebraska. Upon his return to Denver the last week in August, 1905, he was suffering with marked photophobia, lachrymation and mucoid secretion, the conjunctiva being very much congested. The lad was also suffering with rhinitis. Under solution of dionin, an ointment of mereurol and an occasional application of sulphate of copper, improvement took place. A solution of adrenalin was used for the rhinitis. With the advent of cool weather, the improvement was more rapid. To-day the eyes are very comfortable. At first Dr. Bane regarded the case as one of the so-called warty or horny type of trachoma, but the marked increase of the symptoms during the hot months and their subsidence with the change to cooler weather, coupled with the opinion of Dr. Dayton, of Lincoln, Neb., who saw the case in July, convinced him that the disease was vernal conjunctivitis.

Discussion.—Dr. Strader had seen one case in Cheyenne, Wyo., which had been kept comfortable with suprarenalin. Dr. Marbourg had excised the hard granulations on the palpebral conjunctiva in one case, without recurrence. Dr. Libby had repeatedly employed this treatment for a like condition, having previously applied copper sulphate, alum, mereurol, protargol and glycerite of tannic acid alternately, all without benefit; but he had found that the x-rays, used one month, then discontinued for a month, and applied during the third month, reduced the granulations in the eye less affected, but had no appreciable effect on the eye in which the granulations were harder and of the typical pavement variety. Dr. Stevens reported a similar case which had cleared up under the use of 2 or 3 per cent. protargol solution together with the correction of a high oblique astigmatism. He was inclined to attribute the cure to the use of the glasses.

Dr. Jackson reported a case in which a sticky secretion, rendered ropy by contact with tannin, and marked itching had been the prominent symptoms. The itching had been relieved by applications of the *x*-rays, but no permanent benefit had resulted in this or in two other cases from its employment. Dr. Black advised the *x*-rays in Dr. Bane's case.

ABSCESS AFTER EXTIRPATION OF THE LACRIMAL SAC.

A patient was presented, by Dr. Edward Jackson, upon whom extirpation of the lacrimal sac had been done by him one year before. There had been numerous fistulous tracts, and the tissue near the lower margin of the orbit, although covered with epithelium, was soft, boggy, and so poorly organized that it would not retain sutures. The tissue around the sac had been in better condition, and prompt healing followed the operation. The canaliculi were not destroyed and for several months they continued to discharge a little. But the amount of discharge had diminished until when last seen a little mucus was all that could be pressed out of them.

Two weeks ago the patient had received a blow on the side of the nose and edge of the orbit. This had been followed by an abscess which had already opened and was subsiding, when the patient again came under observation. The region of the lacrimal sac was unaffected. The abscess cavity involved what had been diseased tissue at the time of the operation, extending down to the orbital margin. No bare bone and no fistula were discovered. There was no marked nasal disease, but some prominence of the bone at the upper inner angle of the orbit suggested a possibility of ethmoidal involvement.

Discussion.—Dr. Black expressed the opinion that ethmoidal disease was a factor in this case, and concurred with Dr. Patterson in his belief that dacryocystitis is often caused by abscess of the fronto-ethmoidal cells and by disease of the middle turbinated bone.

Dr. Patterson reported a case of paralysis of the external and superior recti muscles, proptosis and papillitis due to an abscess running nearly to the apex of the orbit and connecting with the fronto-ethmoidal and sphenoidal cells. The emptying and healing of the abscess had been followed by subsidence of the eye symptoms.

Dr. Stevens reported a case of exophthalmos due to an abscess of the frontal sinus. Operation on the sinus had been followed by complete recovery.

Dr. Neeper reported a case of diplopia on looking upward and

slight proptosis, due to frontal sinus abscess, which had been opened and successfully treated, causing disappearance of the eye symptoms.

Dr. Black had usually observed outward and forward displacement of the eye in exophthalmos due to involvement of the orbit from disease of the nasal sinuses.

Dr. Strickler reported a case in which an iron splinter had lodged in the inner angle of the orbit. On its removal it had been found possible to syringe through into the nose. There had been loss of vision.

DEGENERATIVE CHANGES IN THE EYE, APPARENTLY CONGENITAL.

A man, aged 33, suffering from partial cataract and degenerative changes in the chorioid and retina, with vision reduced to moving shadows in the right eye and 4/30 in the left, was presented by Dr. Jackson. The left eye showed the more general opacities of the lens; the right the more advanced degenerative changes in the retina and chorioid. The field of vision in the right eye was confined to a small space in the temporal field. In the left eye it was almost confined to the temporal field, moving fingers being perceived almost to the margin of the normal field in the temporal quadrant. But the field for a white square 1 cm. on side was restricted to within 20 degrees of the fixation point. The man thought that his vision had not grown any worse since he could remember. He had been told that he was quite blind for some time after birth.

NEEDLE OPERATION FOR CLOSED PUPIL.

Dr. Jackson presented a case showing what might be effected by a single needle operation. The patient had suffered from prolonged uveitis following simple extraction of cataract, which had produced complete closure of the pupil, leaving only a line where the iris from the two sides came together. An incision was made with the largest Knapp's knife needle, dividing the membrane along this line. Then a second incision was made at right angles to the first, the needle being entered through the iris outside of the sphincter and made to cut into the first incision. The pupil secured was much the same as would be seen after extraction with iridectomy. Although the needle operation was followed by moderate uveitis, there was no tendency to closure of the pupil, and vision of 4/9 was secured, which, a year and a half after the needle operation, had risen to 4/6.

ORBITAL CELLULITIS AND BLINDNESS.

A man had entered the County Hospital (Dr. Jackson's service) with great swelling of orbital tissue and lids, exophthalmos, complete blindness, and superficial ulceration of the cornea. He gave the history that five weeks previously, after some days of irritation of the eye, the swelling had come on with extreme pain in a single night, and that at first the other eye had been almost equally involved, but had rapidly returned to normal. During the three weeks the patient had been under Dr. Jackson's observation the corneal ulcer had healed, the prolapsed conjunctiva had become normal, the swelling of the lids and orbital tissue had greatly diminished, and the exophthalmos had decreased to about 3 mm. The movements of the eye were normal in all directions, but the eye remained absolutely blind. His other eye seemed normal in all respects, and some doubt was felt as to whether it had been much affected from the first. The cornea had now cleared sufficiently to permit an indistinct view of the larger details of the fundus, which appeared normal.

THE LYMPH FOLLICLES OF THE CONJUNCTIVA.

Dr. E. W. Stevens read a paper on this subject. He pointed out that these lymph follicles were identical with the many other solitary follicles of the rest of the body, as in the intestine, the bronchi and the sputum.

In a larger proportion of children follicles of the conjunctiva could be distinguished by the naked eye, under apparently normal conditions. When invisible to the unaided eyes the follicles could almost always be detected with Jackson's binocular.

When the follicles were met with in subjects with a conjunctivitis, the follicles were not the cause of the conjunctivitis, but were merely coincident. The term follicular conjunctivitis should be discarded.

A more serious error was the frequent diagnosing of simple enlarged follicles as trachoma.

The prognosis was always good for a complete recovery without cicatricial changes of any kind.

Dr. Libby said that for years he had been puzzled by having patients state that when very young they had suffered severely from "granulated eye lids," and finally recovered after confinement to a darkened room and prolonged treatment with boric acid, nitrate of silver or copper sulphate, all of which suggested trachoma and led to examinations for cicatricial changes in the lids. But the almost unvarying smooth cornea and normal palpebral conjunctiva, or

the occasional presence of simple enlarged follicles had led him to the conclusion that both diagnosis and treatment had often been wrong in these cases. Dr. Libby also suggested that enlarged follicles were often merely symptoms of poor nutrition and bad hygiene, and were sometimes seen as a result of irritation from atropin, eserine and zinc.

Dr. Patterson pointed out the need of correction of errors of refraction in some cases of enlarged follicles, and had noticed their subsidence after so doing.

Discussion.—Dr. Hilliard stated that in a practice of twenty years in a Louisiana city of 18,000 people, he had observed enlarged follicles of the lower lid, often associated with hypertrophied tonsils and adenoids, in a large percentage of his patients between 2 and 18 years of age. The follicular enlargement had always disappeared spontaneously. He also said that in so-called follicular conjunctivitis micro-organisms, not the follicles, convey the contagion.

Dr. Black called attention to the difference between lymphoid hypertrophy, which disappears spontaneously, and lymphoid inflammation, which, though mild, is accompanied by inflammatory signs, as itching and discharge, and enlargement of the cervical and postcervical glands, as well as those of the fauces and vault of the pharynx.

Dr. Jackson said that enlarged follicles exist before and after conjunctivitis, and made the point that if the tarsus of the upper lid was free from visible follicles, trachoma was not present. In diplobacillus conjunctivitis the follicles are enlarged. Dr. Stevens stated, in closing the discussion, that visible follicles are at times absent in trachoma.

Dr. E. R. Conant of Denver reported a form of conjunctivitis at the angles of the lids which he had observed in the London clinics, called by British ophthalmologists *angular conjunctivitis*, and due to the Morax Axenfeld bacillus. Adjourned.

GEORGE F. LIBBY, Secretary.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, Nov. 9, 1905.

Priestley Smith, F.R.C.S., President, in the Chair.

Dr. L. B. Nias and Mr. Leslie Paton read a preliminary note on the value of the opsonic index for tubercle in phyltetulae. The

research was suggested by Dr. Wright, who observed that frequently a cup of phlyctenulae developed in patients undergoing a course of inoculations with tuberculin. This suggested the investigation of the opsonic index in such cases, in the hope that it might throw some light on the question of the tubercular nature of the disease and as to whether it was exogenous or endogenous in origin. The determination of the opsonic index was done by Dr. Nias in the laboratory of St. Mary's Hospital in 20 cases of this disease. Five cases of other forms of conjunctivitis were used as controls; 2 of the 5 cases were simultaneously examined to determine their opsonic index for staphylococcus. The results showed in striking form variations from the normal in the tubercular index of the cases of phlyctenular conjunctivitis, practically normal in indices in the other forms of conjunctivitis, and practically normal staphylococcus indices in the majority of cases tested. In one case where there was fairly advanced phthisis both the tubercle and the staphylococcus indices were lowered.

Mr. Nettleship, in a note on some varieties of Albinism in man, mentioned the following: (1) Albinism of hair and skin with normal eyes; (2) Albinism of eyes with hair that, originally white, became yellow or red or quite brown about the age of puberty; (3) Albinism of chorioid only with nystagmus and defective sight; (4) progressive pigmentation of the Albinotic eye as in class two, but occurring too long after birth to allow of any improvement of sight; (5) pied Albinism, i. e., congenital absence of pigment from certain areas of skin. In incomplete human Albinism the whole uveal tract was entirely free from pigment, while the retinal epithelium was more or less pigmented. Manz proved this in 1878, and Usher had confirmed this in some sections (shown at the meeting) from the eyes of two individuals. In sections of the iris of a completely Albinotic man the author had found the posterior epithelium, as well as the iris itself, devoid of any trace of epithelium.

In discussing the question of color blindness in women, Mr. Nettleship mentioned five families in which one or more females were congenitally color blind; in four of them some of the males were also affected, and in one the family history was not obtained. He pleaded for a systematic search for color blindness in females, especially in families affected by it, so that we might know for certain whether the current opinion, that we meet one female to forty males affected is correct, and whether also it passes from affected father, through unaffected daughter, to grandson, as in hemophilia.

It was pointed out that slight degrees of color blindness, espe-

cially if intentionally concealed, would be more difficult of detection in women than in men.

Dr. Arthur J. Ballantyne gave a lantern demonstration of a case of metastatic sarcoma of the optic nerve and retina. The patient was a woman aged 58 who had right-sided hemiplegia, paresis of the left internal rectus and blindness of the left eye. All these symptoms were said to have come on within one week. The ophthalmoscope showed a yellowish mass, which was oval in shape, projecting from the disc, which was completely concealed by it. Its diameter was about three times that of the disc, and there were also a number of flame-shaped retinal hemorrhages in the retina.

The patient died, and the necropsy revealed patches of softening in the pons and corpus striatum. In addition to this there was a sarcomatous mass in the mediastinum and root of the left lung, which was probably the primary growth. Metastatic growths were found distributed almost all over the body. A mass was found in the optic nerve; this had pushed its way through the lamina cribrosa into the eyeball, and it was this which was seen ophthalmoscopically. The greater part of this growth was necrotic, but parts of it stained well. The metastatic growths were ascribed by the author to emboli, which had reached the blood stream through the walls of the pulmonary vein.

C. DEVEREUX MARSHALL.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

Monthly Meeting, Oct. 10, 1905.

J. S. Colburn, President, in the Chair.

NEURO-FIBROMA OF THE ORBIT.

Dr. Charles H. Beard reported a case of this rare form of tumor, and exhibited the patient. That neuro-fibroma in general should be of some interest to ophthalmologists is evidenced by the fact that of the thirty odd cases thus far reported, in at least half of them the site of the tumor was the temporo-palbebral region. The rarity of its occurrence in the orbit is shown by the fact that in only two or three other instances was this the seat of the growth. This patient, who is now about 36 years of age, became aware of the presence of something in the right orbit only five or six years ago, though a photograph taken fourteen years previously showed unmistakable prominence of the right eye. He came for consultation first in the autumn of 1902. There was ptosis, and the globe

was displaced forward and downward by a rather firm, sharply circumscribed tumor that presented just beneath the central portion of the upper orbital rim. Vision of the eye was normal. Nothing was done, however, until May, 1904, by which time the growth had so increased in size as to cause great exophthalmos, and the sight was reduced by strangulation to about 20/50. May 18, 1904, the tumor was excised.

Operation.—The supercilia were shaved and an incision made from the midline between the eyebrows, outward over the upper rim of the orbit, and downward to a point opposite the external canthus. This was carried through all the tissues down to the periosteum. On opening the wound the tumor appeared, and was readily loosened save back near the sphenoidal fissure, where it was tightly adherent, and its removal proved difficult and laborious. In size it was about that of the average thumb, greatest dimension fore and aft, and was enclosed in a rather dense capsule. The roof of the orbit had become dome-like to accommodate the mass, and in the center of the cavity was a round depression caused by erosion of the outer table of the bone. The recovery was rapid. The eye retreated, the ptosis disappeared, and the vision returned to normal.

The only nerve that lost its function was the supraorbital. The tumor shelled out of its capsule easily, and was about the color and consistency of hog fat. Through its long axis ran a greatly hypertrophied nerve (the supraorbital). Diagnosis was made by Dr. Brown. The patient still shows two of the distinctive clinical features of neuro-fibroma, viz., pigmentation of the overlying skin, and hard knots, like tortuous bits of gristle, scattered about beneath the adjacent skin. These last constitute the great distinguishing characteristic of this class of neoplasm.

Pathological Report of the case was to the effect that it was found on microscopic examination to be a plexiform neuroma of the supraorbital nerve. The examination having been made by Dr. E. V. L. Brown, who said that the detailed anatomic findings given were probably best explained along the lines laid down by Hanke for this condition.* Such soft, not sharply circumscribed orbit tumors often grow to extensive lobulated masses of convoluted gristly strands of varying size beneath the normal skin. In the case under consideration the tumor extended along the supraorbital nerve, from the supraorbital ridge to the sphenoidal fissure. Erosion of the adjacent bony wall occurs from pressure. The growth

* A. f. O., lix, 2, p. 315, 1904.

is often congenital, or may follow trauma. Operative procedures may cause it to increase or it may spontaneously increase or decrease in size. In the late degenerative stage the mass may fluctuate on palpation. Hanke considers that it is probably a primary hypertrophy of the nerve fibers followed by a degeneration, which in turn excites a proliferation of the fusiform endo- and perineural and connective tissue cells, forming a closely pressed cell swirl or core, and about which there is a second zone of perineural cell increase. Between and among these groups of cells are larger endothelial cells; they are poor in protoplasm and derive nourishment from the endothelium of the hyperplastic lymph vessels and spaces. The nerve-fiber degeneration and the dropsical condition of the entire trunk reduces the nerve at length to a soft myxomatous mass within the epineural capsule. Microscopic specimens were shown.

DOUBLE CONGENITAL IRIDEREMIA WITH LAMINAR CATARACT.

Dr. W. E. Gamble presented this case. He had needled the right lens July 17 and two weeks later had needled a second time. Two weeks after the second needling the eye became painful and injected, and has remained more or less injected up to the present time. absorption is going on to some extent, and the question arises, what to do next; needle again or postpone for considerable time? There was no infection as far as he could judge and no increased tension. The patient was given large doses of salicylate of soda and the pain has subsided, but a slight injection can yet be produced by throwing a strong light into the eye. There is yet no satisfactory explanation as to why the eye has been red and painful. Would it be rational to assume that this maldeveloped eye has less recuperative power than normal eye?

Dr. H. B. Young had seen two cases similar to the patient presented by Dr. Gamble, one of which was published twenty years ago. In the other the patient, a young woman, had fully developed cataracts. An extraction was made on each eye about two years apart. The first eye recovered promptly. About twelve hours after the operation on the second eye acute glaucoma developed and was relieved after three hours by the use of eserine and the final result was a good one. Dr. Young was of the opinion that these cases were particularly liable to suffer from glaucoma. He suggested that Dr. Gamble do an ordinary cataract extraction on the case rather than any further needlings, using irrigation of the anterior chamber for the removal of any soft matter that could not be removed by the ordinary means.

OPTIC ATROPHY.

Dr. Gamble also presented a case of optic atrophy following injury to the orbit. Two weeks ago the patient fell ten feet, striking the head on a piece of coal, with a resulting fracture of the orbital portion of the superior maxillary bone. The next day the vision was quantitative, although the pupil responded to light and accommodation, and there was no material change in the fundus. About four weeks later the disc was decidedly pale and consensual action of the pupil alone was present. The interesting feature of the case is the short time required for the optic disc to become pale—less than four weeks.

Dr. H. B. Young had seen three cases which resembled Dr. Gamble's second case. The first patient, an elderly gentleman, stepped into a hole in a railway station platform, pitched forward striking his left temple against a baggage truck. He became unconscious, but there was little general disturbance. A few days later he noticed that vision in the left eye was dim. The disc was found to be very pale, and only excentric vision in a small part of the left temporal field was present. Six weeks ago a young man was hit on the outer and upper part of the orbit with a stone. After he arrived home he found he could not see with that eye. There was no redness or disturbance of the skin or eye appendages. Examination revealed infiltration at the macula with a central scotoma.

The third case was an old lady operated on for senile cataract in both eyes. In the left eye the cataract was complete, but in the right eye it did not have the typical appearance. He learned that after a fall on the cheek bone the vision of the right eye became rapidly bad, causing apparently a difference in the cataracts in the two eyes. He is at a loss to explain these cases.

HEMORRHAGIC GLAUCOMA.

Dr. Casey Wood presented the following cases:

Mrs. L. L. M., aged 56, discovered accidentally, about one year ago, that she was blind in the left eye. Shortly afterward she was examined by Dr. Prince of Springfield, who told her that she had a hemorrhagic retinitis. She had no other symptoms until about six weeks afterward, when in Cuba, the left eye was attacked by severe pain. She consulted Dr. Santos Fernandez, who diagnosed glaucoma. On her return she saw Dr. Schneider of Milwaukee, who confirmed the diagnosis of both Drs. Prince and Fernandez, and advised that iridectomy be done. This was successfully carried out by Dr. Schneider, but without the relief of pain. Dr. Casey Wood saw her shortly afterward, and found the tension in the left

eye plus two. There was intense engorgement of all the anterior vessels of the eye. V. = no P. L. The anterior chamber was shallow and full of blood, the cornea granular and the iridectomy wound had commenced to gape. The pain was intense and for it the patient had been given hypodermic injections of morphia. After the employment of dionin for a few days for the relief of pain, Dr. Wood removed the globe under a general anesthetic. The eyeball is now under examination by Dr. Brown Pusey.

The second case, C. W. M., was referred to me July 29, 1905, by Dr. Louis Barth of Grand Rapids, Mich. He has always had good eyesight until he woke up one morning about a month previously and found his vision was almost *nil* in his right eye. He had noticed red spots in front of that eye the day before, but had paid little attention to the symptom. For a few days afterward he could distinguish shadows, then complete blindness set in. The eye was otherwise quiet until two days before he came to Chicago, when it became very red and painful. A temporal blister gave him considerable relief. V. = no P. L. Tension plus one. Diagnosis: Hemorrhagic glaucoma. The cornea was hazy. Patient was sent to the hospital and pilocarpin sweats with dionin and eserine were prescribed. In spite of this and other treatment the tension increased and the pain in the eye became much worse. In my absence Dr. Frank Allport did an iridectomy August 3. This procedure gave him considerable relief, which was sustained by subconjunctival injections of dionin and an occasional Credé poultice.

The patient did nicely until September 7, when a fresh hemorrhage was noticed in the anterior chamber, accompanied by pain in and about the eye and injection of the globe. T = plus two. A paracentesis corneæ was done with little relief. As the symptoms grew steadily worse the eyeball was excised on September 10.

Dr. Charles H. Beard stated that the fact that the glaucoma was unilateral did not argue against its being due to a constitutional condition, such as arteriosclerosis. Indeed, many of the cases of blindness that we see in elderly subjects, the result of arterial and venous thrombosis of the retinal blood vessels, are monolateral, the fellow-eye retaining good sight indefinitely. He believes that the so-called hemorrhagic glaucoma is, most always, secondary to endarteritis and endophlebitis of the retinal and chorioidal vessels, and that such eyes are doomed from the moment the glaucoma supervenes. He recalled one case, occurring in a man about 65 years of age, with evidences of general degeneration of the circulatory system, which was apparently produced by the instillation of a

drop of homatropin, put into the eye for the purposes of examination.

Dr. W. H. Wilder said that the signs of hemorrhagic glaucoma are so indefinite that little reliance can be placed on the statement that the disease occurs only in one eye. There may be localized arterial changes, and only one eye may be affected. If the vessels in only one eye are weak, hemorrhages will occur in that eye only, and that may predispose to glaucoma. He also referred to blind eyes in which there is a great tendency to hemorrhage after operation. He has had three such cases of violent hemorrhage after iridectomy. In each case the eye was lost. The third case was preceded by a sympathectomy. Therefore he dreads doing iridectomies on blind eyes when he can not see the condition of the fundus.

Dr. Oscar Dodd had one case where he could not see the fundus. The pupil was contracted under eserine, with the tension high. He did an iridectomy, which was followed by severe hemorrhage, but after a few days the eye cleared up, the pain stopped and there was vision of fingers at three or four feet until six weeks later, when the cornea became steamy and other symptoms set in showing what the end would be. The patient complained of poor vision in the other eye, and Dodd found arteriosclerosis but no hemorrhages. All the arteries were markedly sclerosed.

Dr. W. A. Mann mentioned having seen one of these cases in which both eyes were involved, and the constitutional condition was one of arteriosclerosis. First there were only a few hemorrhages, but later the eye became entirely blind with slight increase in tension. Then the other eye became blind. There was no kidney trouble, but some increase in blood pressure. While under treatment acute glaucoma developed. Iridectomy in one eye relieved the pain. There is no vision, but the patient complains of peculiar light sensations. One day the flashes of light are white and the next day they are blue, recurring regularly and always alternating.

Dr. Casey Wood, in closing, suggested that sympathectomy or the removal of one of the cervical ganglia might be justifiable, but that posterior sclerotomy has usually proven as useless as iridectomy and generally ends in enucleation of the eye. He thought that there might be some local reason for the unilateral cases.

Dr. W. H. Wilder presented a case of rupture of the chorioid in a boy of 13 years. The patient gave a history of being hit in the eye with an apple. About four weeks afterward it was found that the chorioid was ruptured in two places. There was very little reaction after the injury, except that there was marked mydriasis, evidently due to paralysis of the sphincter. Vision was so low

that it was impossible to determine whether accommodation was also paralyzed. However, it is possible with eserine, to readily bring the pupil down to a very small size, so that while there may be paralysis of the sphincter of the iris, yet the muscle responds to a myotic. One rupture is about one diameter of the optic disc removed from its margin, and through the macular region is another rupture, which is not quite so symmetrical, the upper part converging to form a "Y." The question arose as to whether the impairment of vision was due entirely to the injury of the retina and choroid in the macular region, or whether it was a case of traumatic myopia, instances of which have been recorded. The retinoscope showed marked astigmatism in that eye, but not typical myopia. The vertical meridian is myopic to the extent of $2\frac{1}{4}$ D., whereas the horizontal meridian is hyperopic 2 D. with vision of 20/100; when at first it was fingers at eight feet. The left eye has vision of 20/50 after correction of the astigmatism which is hyperopic.

Dr. Henry Gradle presented the following cases:

Case of severe infection through an old iris prolapse ending in recovery. It led to the singular problem whether to remove a seeing but dangerous eye in order to protect the mate blind with cataract. Mrs. S., 50 years of age and in feeble health, had a cataract removed from the left eye about a year ago by another surgeon with good sight, but leaving a good-sized iris prolapse free from irritation. The right eye has a nearly matured cataract and seems otherwise healthy. June 2, 1905, the left eye became very sore and the sight was lost quickly. Three days later she came to me with intense cyclitis starting from the inflamed iris prolapse, with smoky cornea and pronounced hypopyon, V equal shadows. Since such eyes are more often lost than saved, and are known to be especially liable to sympathize with the other, the trying problem presented itself, whether to enucleate. I concluded to defer operation as long as I could observe any steady improvement. The suffering and the objective appearance diminished promptly under treatment. Within three days the hypopyon was gone, and the sight began to improve. The pupil yielded to atropin, and it could then be seen that the vitreous was infiltrated. Within five weeks the diffuse injection had disappeared entirely leaving the still angry looking prolapse surrounded by vascularity. The clearing of the cornea allowed the sight to rise to fingers at six feet $W + 10$; but as the cornea cleared, a few ominous though fine deposits on the posterior surface became visible. Still the eye quieted down completely in about eight to ten weeks and the prolapse had shrunk to a very satisfactory extent. Sight had risen to fingers at 8 feet, $W + 10$, the imperfect

sight being due to an increase in the capsular cataract, while the vitreous had evidently cleared completely. Locally, atropin had been used with heat, after a few days dionin and later subconjunctival injections of salt solution. Internally, mercury was used from the start, but had to be omitted after a week on account of salivation. From the first day until the end salicylate was used energetically and continuously (8.00 to 10.00 gm. per day). According to all my experience, I attribute the recovery mainly to salicylate. After an interval of nearly six weeks another inflammatory attack began in the prolapse and proceeded to a very mild cyclitis without visible exudate and yielding in two weeks. Since the recovery I have tried to obtain obliteration of the prolapse by repeated mild canterization with a fine-pointed burner, but have not yet succeeded completely.

Dr. E. V. L. Brown said that Wagenmann had reported a study of eight cases of incarcerated irides, five of which improved, and in the others the eyes were lost. Twelve were studied microscopically, and in all of them cocci were found in the corneal wound following down the incarcerated iris into the vitreous and producing a panophthalmitis. Five of the eighteen cases occurred in iridectomy wounds, the remaining thirteen occurred in corneal wounds and ulcers.

Dr. Gradle also showed a patient with persistent interstitial keratitis after a normal cataract extraction. In a healthy man of 61 years, a nearly mature cataract was extracted without complication. The method was a peripheral incision with the retention of a conjunctival bridge. This procedure renders the delivery a trifle difficult, but insures perfect coaptation and immediate union, and the author has found it very satisfactory in other patients. The irritation after extraction was very moderate, but lasted five weeks, until all cortex had been absorbed. But during this time the cornea had become steamy, its surface stippled and in its center there appeared a few branching deep grayish streaks. A narrow zone near the inferior margin of the cornea remained normal. This condition has now remained stationary with scarcely a change since twenty months, without irritation, with normal tension and no other complication. No treatment has been of any influence.

Dr. Thomas Faith thought that Dr. Gradle's last case belonged in the same list as those cases of interstitial keratitis that are excited by trauma. In looking over the literature on this subject he had found some thirty odd cases of the diffuse type that were excited apparently by trauma. He also found a great many cases of circumscribed interstitial keratitis due to the same cause. The lat-

ter class of cases occurred usually in persons suffering from acquired syphilis, while the cases of diffuse keratitis were seen in persons suffering with hereditary syphilis and in patients in which no particular cause other than general bad nutrition could be assigned as an underlying factor. He believed that Dr. Gradle's case was undoubtedly one of interstitial keratitis, although circumscribed in its extent. He also referred to cases published recently in *THE OPHTHALMIC RECORD* by Bruns, cataract extractions in which the wound was slow in closing and shreds of capsule were in contact with the posterior surface of the cornea, causing a circumscribed interstitial keratitis, or what Bruns termed contact keratitis.

Dr. Remen presented for Dr. H. W. Woodruff a case of probable sarcoma of the iris. The patient was a man 41 years of age, who presented himself at the eye and ear infirmary Sept. 15, 1905, with blindness of the right eye from glaucoma and a history of slight disturbance of vision in the left eye for the past three months. Examination revealed a nodular growth near the pupillary margin of the iris of the left eye, in the lower outer quadrant, which was about 3 mm. in diameter. It was slightly vascular. Tuberculosis had been eliminated by physical examination and the tuberculin test. Syphilis was eliminated by the administration of mercury and the iodids. Apparently, there had been a slight progression.

Dr. W. E. Gamble thought the hypodermic injection of 5 mg. and later 8 mg. of Koch's old tuberculin without febrile reaction was proof that the growth in the iris was not tubercular. Clinically, he thought the iris did not present the appearance that would be present if a tubercle was present, i. e., iritis with ciliary injection and synechia. Further, there was no descemetitis present as would be found in tubercular iritis. The patient had consulted the doctor on account of the trouble in the right eye two years ago when a tentative diagnosis of panophthalmitis had been made.

Dr. Oscar Dodd had seen the case about five weeks ago and thought that as it had increased in size and that as the tuberculin test had been negative he had concluded that the case was one of non-pigmented sarcoma.

Dr. Casey Wood thought the blind eye should be enucleated and a careful anatomic examination made of it in the hope that it might throw some light on the process in the other eye. He felt certain that the tumor is a sarcoma of the iris. The slow growth, the lack of vascularity, the fact that it corresponds in time and situation to the usual appearance of iridic sarcoma and the negative results from iodids and tuberculin all point to sarcoma. The patient

should have the benefit of a careful iridectomy, performed as early as possible.

Dr. W. F. Coleman cited a case of iridectomy done for sarcoma of the iris in 1903, in which the sarcoma extended to the ciliary body, and in which the histologic examination proved the clinical diagnosis. The irritation subsided, and the eye has remained perfectly quiet up to the present time, with about one-half vision. In the case under discussion he noticed one vessel running across the face of the tumor, and, in his opinion, the tumor has all the appearances of a sarcoma; and the clinical history is not consistent with that of tubercular growth or specific granuloma.

THOMAS FAITH, Secretary.

ADRENALIN-COCAIN.—J. M. Berry, in the *American Journal of the Medical Sciences* for November, states that the great disadvantage associated with the use of a local anesthetic is the danger to the individual resulting from the absorption of the drug used as the anesthetic. Cocain is such a drug. It is almost perfection in its local application, making possible the severest operations free from pain, and yet at times cocain poisoning may result from the absorption of the drug. The latest and most universal method for the reduction of the toxicity of cocain is its use in combination with adrenalin chlorid. Scarcely a medical journal can be perused without finding some reference to this new anesthetic. Berry concludes as the result of his experiments that what is certainly shown is that *adrenalin will not protect the organism against toxic doses of cocain*. In the use of adrenalin-cocain care should be exercised not to inject a toxic case of the latter, for not only does adrenalin fail to protect the body against the toxic doses of cocain, but it seems to enhance the toxic action.—Abstract in *Cleveland Medical Journal*.

TESTING TRAINMEN'S EYES.—To make eye tests and study conditions under which train signals are displayed, oculists will be placed on the engines that pull the fast trains on the Chicago, Milwaukee & St. Paul Railroad. The test will be made preliminary to a revision of the system of examining trainmen for defects of sight and may result in a change in the present manner of displaying lights and semaphore arms. The road men complain that their eyes are tested theoretically rather than along practical lines.

Notes and News.

MR. GEORGE A. BERRY, who for twenty years has been the senior ophthalmic surgeon to the Edinburgh Royal Infirmary, retired recently and has been appointed on the consulting staff.

DR. ARTHUR H. H. SINCLAIR, M.D., F.R.C.S., Ed., has recently received the appointment as assistant ophthalmic surgeon to the Edinburgh Royal Infirmary. His term of service is five years.

AT THE last regular meeting of the board of directors of the Chicago Eye, Ear, Nose and Throat College, Dr. A. H. Andrews was elected to a professorship of otology and rhino-laryngology.

THE BRITISH MEDICAL ASSOCIATION meets in Toronto, Canada, in 1906, the sessions commencing August 21 and continuing for one week. Dr. R. A. Reeve, professor of ophthalmology in the University of Toronto, is the president-elect.

THE testing of the eyesight of the children attending the public schools of Manchester, England, has been completed. The total number of children tested was 32,486, of whom 2,126 were found to be suffering from defects of such gravity as to warrant a circular being sent to the parents. This system of testing has now been in force two years.

TESTS OF SIGHT AND HEARING FOR GOVERNMENT EMPLOYEES.—The German department of public works has ordered that every employé throughout the department is to be tested for vision and hearing in the course of the next five years. Those found defective are to be transferred to posts of lesser responsibility or pensioned out of the service.

A PATIENT'S INGRATITUDE.—In the case of Abraham Bernstein, who sued Dr. George F. Suiker for \$10,000, alleging that he had been made blind through an operation performed by the defendant

two years ago, the court instructed the jury that there was no case against Dr. Suker, who, the evidence showed, had treated the plaintiff gratuitously for two years, as a result of which the man's sight had slightly improved.—*Jour. A. M. A.*

PRIZE FOR WORK ON TRACHOMA.—*The Journal A. M. A.* announced some time ago that the government of Hungary had offered a prize of about \$500 for the best work offered in competition on the subject of trachoma. The prize was divided and half given to Professor Kuhnt of Königsberg for his essay on the subject of treatment of trachoma. The other half of the prize was not awarded, as no suitable articles on the pathology of the disease were received.

THE following are some of the most recent contributions to ophthalmic literature:

ENCYCLOPEDIE FRANCAISE D'OPHTALMOLOGIE. Edited by Drs. F. LaGrange and E. Valude. Vol. V contains articles on Glaucoma, Sympathetic Inflammation, Diseases of the Lids, Tumors of the Lids, Diseases of the Conjunctiva, Cornea, Sclera, Tumors of the Conjunctiva, Cornea and Sclera, by Drs. Gama Pinto, A. Terson, LaGrange, Morax and Rohmer. 156 illustrations: Publisher, Octave Doin, 8 Place de l'Oxéon, Paris. Price, 150 francs by subscription.

THE ARTIFICIAL EYE (L'Oeil Artificiel). By Dr. Robert Coulomb. 27 Photographs and 123 Illustrations. Publisher, J. B. Bailliére et Fils, Paris. Price, 10 francs.

MANUAL OF THE DISEASES OF THE EYE. By Charles H. May, M.D. For Students and General Practitioners. Fourth Edition. Revised. With 360 Original Illustrations, Including 21 Plates, with 61 Colored Figures. Publisher, Wm. Wood & Co., New York. Price, \$2.00.

THE ACTION OF DRUGS AND POISONS ON THE EYE (Die Wirkungen von Arzneimitteln und Giften auf das Auge). A Manual for General Practitioners by Dr. L. Lewin, Professor in Berlin, and Dr. H. Guillery, Professor in Cologne. 2 vols. 99 Illustrations. Pp. 857 and 1,044. Publisher, Hirschwald, Berlin. Price, 52 m.

STRABISMUS OR SQUINT, LATENT AND FIXED. Francis Valk, M.D., New York. Publisher, G. P. Putnam's Sons and Knickerbocker Press, New York and London.

STEREOSCOPIC PICTURES, WITH ADJUSTABLE HOLDER, FOR EXAMINATION OF BINOCULAR VISION AND EXERCISE IN SQUINT. By Dr. W. Hausmann, with Directions for Their Use by Dr. A. Bielschowsky, Privat Docent in the University of Leipsic. Publisher, Wilhelm Engelmann, Leipsic.

BIOGRAPHIC CLINICS. ESSAYS CONCERNING THE INFLUENCE OF VISUAL FUNCTION, PATHOLOGIC AND PHYSIOLOGIC, UPON THE HEALTH OF PATIENTS. By George M. Gould, M.D. Vol. iii. Publisher, P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia. Price, \$1.00.

THE TREATMENT OF DISEASES OF THE EYE. By Dr. Victor Hanke, Vienna. Translated by J. Herbert Parsons, B.S., D.Sc., F.R.C.S., and George Coats, M.D., F.R.C.S., London. Publisher, W. T. Keener & Co., 90 Wabash Avenue, Chicago. Price, \$1.25 net.

LOCAL ANESTHESIA IN EYE WORK (Die lokale anästhesia in der Augenheilkunde). By Prof. Dr. Best, Giessen. Publisher, Carl Marhold. Price 1 mark 20.

SKIASCOPY AND ITS PRACTICAL APPLICATION TO THE STUDY OF REFRACTION. By Edward Jackson, A.M., M.D., Professor of Ophthalmology in the University of Colorado. Fourth Edition. Revised and Enlarged, with 28 Illustrations. Publisher, The Herrick Book and Stationery Company, Denver, Colo.

THE ROYAL LONDON OPHTHALMIC HOSPITAL REPORTS. Edited by Wm. Lang, F.R.C.S., England. Vol. xvi, Part iii, October, 1905. Publisher, J. & A. Churchill, 7 Great Marlborough Street, London, England. Price, 5 shillings.

TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM. Vol. xxv, 1905. Publisher, J. & A. Churchill, 7 Great Marlborough Street, London. Price, 12 shillings and 6 pence.

THE DEVELOPMENT OF THE EYE. By J. T. Graddon, M.A. (Oxon). Publisher, Storey & Co. Price, 3s. 6d.



RE The Ophthalmic record
1
04
v.14

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY
